



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN IEC 81346-2:2019

Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 2: Classification of

Systèmes industriels, installations et
appareils, et produits industriels -
Principes de structuration et
désignations de référence - Partie 2:

Industrielle Systeme, Anlagen und
Ausrüstungen und Industrieprodukte -
Strukturierungsprinzipien und
Referenzkennzeichnung - Teil 2:

08/2019



National Foreword

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ILNAS-EN IEC 81346-2:2019

EUROPEAN STANDARD **EN IEC 81346-2**

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Supersedes EN 81346-2:2009 and all of its amendments
and corrigenda (if any)

English Version

**Industrial systems, installations and equipment and industrial
products - Structuring principles and reference designations -
Part 2: Classification of objects and codes for classes
(IEC 81346-2:2019)**

Systèmes industriels, installations et appareils, et produits
industriels - Principes de structuration et désignations de
référence - Partie 2: Classification des objets et codes pour
les classes
(IEC 81346-2:2019)

Industrielle Systeme, Anlagen und Ausrüstungen und
Industrieprodukte - Strukturierungsprinzipien und
Referenzkennzeichnung - Teil 2: Klassifizierung von
Objekten und Kennbuchstaben für Klassen
(IEC 81346-2:2019)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 3/1393/FDIS, future edition 2 of IEC 81346-2, prepared by IEC/TC 3 "Information structures and elements, identification and marking principles, documentation and graphical symbols" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 81346-2:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-04-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-07-23

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Endorsement notice

The text of the International Standard IEC 81346-2:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60898 (series)	NOTE	Harmonized as EN 60898 (series)
ISO 12006-2:2015	NOTE	Harmonized as EN ISO 12006-2 ¹ (not modified)

¹ Under preparation. Stage at the time of publication: prEN ISO 12006-2:2019.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 81346-1	2009	Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 1: Basic rules	EN 81346-1	2009



INTERNATIONAL STANDARD

NORME INTERNATIONALE



HORIZONTAL STANDARD
NORME HORIZONTALE

**Industrial systems, installations and equipment and industrial products –
Structuring principles and reference designations –
Part 2: Classification of objects and codes for classes**

**Systèmes industriels, installations et appareils, et produits industriels –
Principes de structuration et désignations de référence –
Partie 2: Classification des objets et codes pour les classes**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL SYSTEMS, INSTALLATIONS
AND EQUIPMENT AND INDUSTRIAL PRODUCTS –
STRUCTURING PRINCIPLES AND REFERENCE DESIGNATIONS –****Part 2: Classification of objects and codes for classes****FOREWORD**

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International Standard IEC 81346-2 has been prepared by IEC technical committee 3: Information structures and elements, identification and marking principles, documentation and graphical symbols, in cooperation with ISO technical committee 10: Technical product documentation.

It is published as a double logo standard.

It has the status of a horizontal standard in accordance with IEC Guide 108.

This second edition cancels and replaces the first edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) The entry classes of the classification scheme have been defined to reflect the “inherent function” of the object classified;
- b) The classes are defined to align with the principles of ISO 22274 and ISO 704;
- c) A three-level classification scheme has been defined, which provides a greater flexibility for the designer in some technical fields;
- d) Classes are defined by their definition and provided with a preferred term. Examples are provided if needed;
- e) A separate classification scheme for spaces has been provided.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
3/1393/FDIS	3/1402/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 81346 series, published under the general title *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The aim of this document is to establish classification schemes for objects with assigned letter codes for the defined classes, which can be applied throughout all technical areas, e.g. electric, mechanical, process and civil engineering as well as all branches of industry, e.g. energy, chemical, construction, automotive, shipbuilding and marine. The letter codes are intended for use with the rules for the construction of reference designations in accordance with IEC 81346-1 and other parts of the ISO/IEC 81346 series. The letter codes can also be used "stand-alone" as a generic type designation where a type of component is to be indicated, for example in specifications.

The classification scheme in Clause 5 of this document is an enumerative and faceted classification scheme with the inherent function as the entry class. It is made in accordance with the rules in ISO 704 and the guidelines in ISO 22274.

At the entry level, as shown in Table 1, the inherent function is used to narrow down the areas of applicability of the individual classes to a manageable size. For the sub-divisions of the entry classes, faceted approaches are applied to specify the nature of the concepts contained in the leaf classes.

By applying this method, this document provides stable class codes for objects (including systems and system elements), which are independent of how the objects are used or applied in any design during the entire lifecycle.

Any class is defined by its definition only. Users should select the appropriate class for their object to be classified based on the definition, and not rely upon the class name or the examples.

INDUSTRIAL SYSTEMS, INSTALLATIONS AND EQUIPMENT AND INDUSTRIAL PRODUCTS – STRUCTURING PRINCIPLES AND REFERENCE DESIGNATIONS –

Part 2: Classification of objects and codes for classes

1 Scope

This part of IEC 81346 establishes classification schemes with defined object classes and their associated letter codes, and is primarily intended for use in reference designations and for designation of generic types.

The classification schemes are applicable for objects in all technical disciplines and all branches of industry.

This document is a horizontal publication also intended for use by technical committees in preparation of publications related to reference designations in accordance with the principles laid down in IEC Guide 108.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 81346-1:2009, *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 1: Basic rules*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 81346-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

inherent function

function of an object, independent of any application of the object

Note 1 to entry: Inherent is regarded as existing in something as a permanent, essential, or characteristic attribute.

3.2

classification scheme

descriptive information for an arrangement or division of objects into groups based on criteria such as characteristics, which the objects have in common

Note 1 to entry: A classification scheme is a concept system used for classifying some objects.

[SOURCE: ISO/IEC 11179-1:2015, 3.3.4, modified – examples deleted.]

3.3

class of object

set of objects characterized by the same inherent function

3.4

space

limited three-dimensional extent defined physically or notionally

[SOURCE: ISO 12006-2:2015, 3.1.8]

3.5

type-of relation

relation between two classes where the characteristics defining one of the classes includes that of the other class and at least one additional delimiting characteristic

Note 1 to entry: This term corresponds to the term "generic relation" defined in ISO 1087-1:2000, 3.2.21.

3.6

part-of relation

relation between two classes where one of the classes constitutes the whole and the other class a part of that whole

Note 1 to entry: This term corresponds to the term "partitive relation" defined in ISO 1087-1:2000, 3.2.22.

Note 2 to entry: Part-of relation is also known as partitive relation, part-whole relation or whole-part relation.

Note 3 to entry: See also IEC 81346-1.

3.7

activity space

space defined by the spatial extension of an activity

Note 1 to entry: A spatial extension of an activity, for example, a table or a bed, and the activity space around them.

[SOURCE: ISO 12006-2:2015, 3.1.9]

3.8

built space

space defined by built or natural environment or both, intended for user activity or equipment

Note 1 to entry: A built space is, for example, a room defined by floor, ceiling, and wall, or a footpath, or power-line corridor defined by a natural forest.

Note 2 to entry: Spaces occupied by construction elements are known as construction spaces, and are handled as properties of construction elements themselves.

[SOURCE: ISO 12006-2:2015, 3.4.4]

4 Classification principles

4.1 General

The purpose of classifying is to distinguish among objects in a collection based on differentiation of characteristics of interest. Classes are organized in type-of relations and are defined by different values of a specific characteristic of interest.

The classification in this document is made with an entry class based on function in a broad sense. This is in accordance with ISO 22274:2013, 5.4.4 which recommends an enumerative and faceted classification system with an entry class.

When a class code is applied in a reference designation, the purpose is to classify the occurrence of the object, not the individual, as described in IEC 81346-1:2009, 4.8 and Table 1 (general rules). In such a situation, the object is generally specified and assigned its inherent function in the design stage of the project. Classes can also be used by manufacturers to show multiple potential use of a product. In this way, the classification can enhance searchability.

The class name (preferred term) assigned to the classes and the examples of terms provided in this document are based on the inherent function of an object, i.e. independent of any application.

This classification scheme ensures a life cycle stable class code, as the stable object occurrence is classified by the stable inherent function of the object occurrence: A stake is a stake, a door is a door and so on, no matter what individual is used to realize the occurrence.

Objects related to a class may be considered as a discrete collection of objects, and may therefore be further classified into sub-classes based on the differentiation of a specific characteristic. In this document, this has resulted in a classification scheme starting with classes representing general types based on function in a broad sense (1st letter code), continuing into classes representing types that are more specialized in two steps, represented by 2nd and 3rd class code.

All examples and terms in the classification scheme of this document are recognized as being used to name a member of their class. As different branches have different usage of terminology, the same example or term might occur in different classes.

4.2 Relation between classification and composition

IEC 81346-1 defines rules on how an object may be structured into its constituent objects resulting in a composition hierarchy. For the purpose of classifying objects, this document defines classes and codes that results in a classification hierarchy, see Figure 1, which is a copy of Figure 2 in 4.2 of ISO 12006-2:2015.

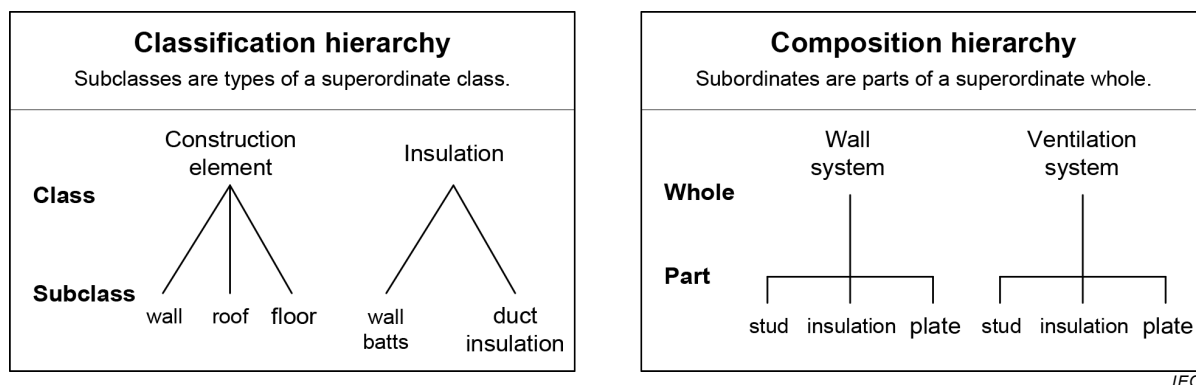


Figure 1 – Illustration of a classification hierarchy and a composition hierarchy

4.3 Classification schemes of this document

This document provides different classification schemes of objects primarily intended for use in reference designations, based on the basic requirements given in Annex E. The provided classification schemes are:

- inherent function of objects, see Clause 5;
- spaces, see Clause 6;
- infrastructure objects, see Clause 7.

The content of any class is determined by the definition of the class only. A preferred term determines the class in daily use and forms part of the definition of subclasses. The classification tables of this document are considered to be complete, and therefore no “miscellaneous” or “other” classes are present. If no appropriate class for an object-of-interest can be found on a sub or sub-sub level, objects shall be classified to the higher level i.e. to the sub-class or entry class.

This document provides classification schemes with multiple classification levels. The user may choose to apply letter codes using

- a single letter, representing the entry class; or
- two letter code, representing a sub-class in the scheme; or
- three letter code, representing a sub-sub-class in the scheme.

5 Classification scheme for the inherent function of objects

5.1 General

The classification scheme defined in this clause is based on the inherent function of objects.

The classification scheme has a hierarchical classification structure that constitute three levels from top to lower.

The entry classes and their respective subclasses are defined considering the inherent function of objects, based on the knowledge of the use of objects in existing designs, and the classification schemes defined in IEC 81346-2:2009.

NOTE 1 When the classification scheme shown in Table 1 and Table 2 refer to high voltage (HV) or low voltage (LV), high voltage is considered to be any voltage > 1 000 V AC or > 1 500 V DC. Low voltage is considered to be any voltage ≤ 1 000 V AC or ≤ 1 500 V DC. These voltage limits are in accordance with IEC 61140.

NOTE 2 In Annex D the difference between the classification scheme and classes in IEC 81346-2:2009 and the classification scheme and classes of this publication is given.

5.2 Entry classes

Table 1 defines the entry classes for the classification scheme for inherent function of objects.

Table 1 – Entry classes

Class code	Class definition	Class name
B	object for picking up information and providing a representation	sensing object
C	object for storing for subsequent retrieval	storing object
E	object for emitting	emitting object
F	object for protecting against the effects of dangerous or undesirable conditions	protecting object
G	object for providing a controllable flow	generating object
H	object for treating matter	matter processing object
K	object for treating input signals and providing an appropriate output	information processing object
M	object for providing mechanical movement or force	driving object
N	object for enclosing partly or fully another object	covering object
P	object for providing perceptible information	presenting object
Q	object for controlling access or flow	controlling object
R	object for restricting or stabilising	restricting object
S	object for detecting a human action and providing an appropriate response	human interaction object
T	object for transforming	transforming object
U	object for localising of other objects	holding object
W	object for leading from one place to another	guiding object
X	object for interfacing an object	interfacing object
The letters A, I and O shall not be used as a class code.		
The letters D, J, L, V, Y and Z are reserved for future standardization.		

Each class defined in Table 1 is in this document associated with a set of predefined subclasses allowing a more detailed characterization of an object, if required. The definitions of subclasses of objects (sub-class and sub-sub-class) are presented in Table 2 and Table 3 together with their associated letter codes.

NOTE Subclasses do not define a new level in a composition structure, i.e. they do not describe a subdivision of the object. Class and subclass refer to the same object.

Annex B illustrates how the classes in Table 1 relate to a generic process.

5.3 Complete classification scheme

Table 2 shows the first two levels of the classification scheme for inherent function of object, while Table 3 shows all the three levels defined.

Numerals below class code in Table 2 and Table 3 show the level in the classification structure, that is, level 1, 2 and 3 mean entry class, sub-class and sub-sub class respectively, see Annex A.

Table 2 – First two levels of the classification scheme for inherent function of objects

Class code	Class definition		Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
	1	2			
B		<i>object for picking up information and providing a representation</i>	sensing object		Kind of quantity
	BA	<i>sensing object for electric potential</i>	electric potential sensing object	coupling capacitor, measuring voltage relay, voltage transformer	Kind of output signal
	BB	<i>sensing object for resistivity or conductivity</i>	resistivity sensing object	electric resistivity detector, electric resistivity sensor, thermal resistivity detector, thermal resistivity detector	Kind of flow and output signal
	BC	<i>sensing object for electric current</i>	electric current sensing object	electronic overload relay, measuring current relay, measuring current transformer, overload relay	Kind of output signal
	BD	<i>sensing object for density</i>	density sensing object	aerometer, density sensor, density switch, density transformer, hydrometer	Kind of output signal
	BE	<i>sensing object for field</i>	field sensing object	electric field detector, electric field sensor, magnetic field detector, magnetic field sensor, reed relay, reed switch	Kind of output signal
	BF	<i>sensing object for flow</i>	flow sensing object	flow sensor, flow switch, flow transmitter, gas flow sensor, gas flow switch, liquid flow sensor, matter flow sensor, matter flow switch, water flow sensor	Kind of output signal
	BG	<i>sensing object of spatial dimension and/or position</i>	physical dimension sensing object	2D-scanner, 3D-scanner, alignment sensor, alignment threshold detector, angle switch, angle transmitter, coordinates scanner, distance switch, distance transmitter, end stop, laser distance sensing switch, laser distance sensor, laser scanner, movement detector, movement sensor (PIR), object scanner, position sensor, position switch, position transmitter, presence indicator, presence locator, radar, rotary encode, visibility sensor, wind direction indicator, wind direction sensor	Kind being sensed and kind of output signal
	BH	<i>sensing object for energy</i>	energy sensing object	condensate sensor, electric energy meter, energy cooling meter, energy meter, energy sensor, flow energy meter, gas energy meter, kWh sensor, thermal energy meter	Kind of energy
	BJ	<i>sensing object for power</i>	power sensing object	kW meter, power limit switch, power meter	Kind of output signal
	BK	<i>sensing object for time</i>	time sensing object	Clock, time counter, time information device, time sensor, timer switch	Kind of output signal
	BL	<i>sensing object for level</i>	level sensing object	level sensor, level switch, level transmitter, liquid level sensor, liquid level switch	Kind of output signal

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
Licensed to Festo SE & Co. KG - GLOBALNORM ILNAS eShop 2022 05468 / Max. Networking : 1 / downloaded : 2022-05-31 NOT FOR COMMERCIAL USE OR REPRODUCTION	BM	<i>sensing object</i> for humidity	humidity sensing object	humidity sensor, humidity switch, humidity transmitter	Kind of output signal
	BP	<i>sensing object</i> for pressure	pressure sensing object	absolute pressure sensor, absolute pressure switch, absolute pressure transmitter, differential pressure sensor, differential pressure switch, differential pressure transmitter, manometer, pressure monitor, pressure sensor, pressure switch, pressure transducer, relative pressure detector, relative pressure sensor, relative pressure switch	Kind of output signal
	BQ	<i>sensing object</i> for substance concentration	concentration sensing object	CO concentration sensor, CO ₂ concentration sensor, concentration sensor, concentration detection switch, fog detector, fog sensor, gas detector, gas sensor, liquid detector, liquid sensor, NH ₃ concentration sensor, petrol concentration sensor, smoke detector, smoke sensor, smoke switch, solid matter detector, solid matter sensor, turbidity detector, turbidity sensor, visibility detector, visibility sensor	Kind of object and kind of output signal
	BR	<i>sensing object</i> for radiation	radiation sensing object	electromagnetic wave detector, electromagnetic wave sensor, Geiger meter, gamma-radiation detector, IR- sensor, light curtain, light detector, light sensor, light transmitter, line detector, low-light relays, lux sensor, photocell, radar-sensor, radiation counter, radiation detector, UV-sensor	Kind of radiation and kind of output signal
	BS	<i>sensing object</i> for time-rate	time-rating object	accelerometer relay, accelerometer transmitter, cycle rate detecting switch, cycle rate sensor, cycle rate transmitter, frequency transmitter, movement detector, movement transmitter, rotation speed relay, rotation speed sensor, seismic sensor, seismic switch, shake switch, speed detecting switch, speed sensing transmitter, speed sensor, tachometer	Kind of time object sensed and kind of output signal
	BT	<i>sensing object</i> for temperature	temperature sensing object	temperature detector, temperature sensor, temperature switch, temperature transmitter	Kind of output signal
	BU	<i>sensing object</i> for multiple quantities	multi-quantity sensing object	Buchholz relay, distance protection relay, impedance protection relay, multi-detector, multi- sensor, multi- sensor switch, negative phase-sequence relay	Kind of output signal
	BW	<i>sensing object</i> for weight, force or torque	force sensing object	force detecting switch, force sensor, force value transmitter, load cell, torque sensor, torque switch, torque value transmitter, weight detecting switch, weight sensor, weight transmitter	Kind of object sensed and kind of output signal

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
C	BX	sensing object of sound and/or visual appearance	audio-visual sensing object	alarm microphone, acoustic detector, acoustic sensor, acoustic survey device, camera, CCTV, face recognition device, finger-print reader, glass breakage detector, image sensor, image detector, iris reader, microphone, profile control, PTZ camera, scanner, video camera	Kind of output signal
	BY	sensing object of stored information	information sensing object	barcode reader, chip card reader, chip reader, electromagnetic reader, magnetic stripe reader, optical disk reader, optical reader, RFC reader, RFID reader, QR-reader, tape reader	Kind of method
	BZ	sensing object for incidents or amounts	incident sensing object	counter, matter detector, person detector, presence detector, threshold counter	Kind of incidents or amounts sensed
		object for storing for subsequent retrieval	storing object		Kind of object being stored and the method applied
	CA	storing object for electric energy within an electrostatic field	capacitive storing object	capacitor	Kind of method applied
	CB	storing object for electric energy within an electromagnetic field	inductive storing object	inductor	Kind of method applied
	CC	storing object for electric energy within an electrochemical substance	electrochemical storing object	rechargeable battery	Kind of method applied
	CF	storing object for information	information storing object	information storing media, seat	Kind of method applied
	CL	storing object for matters or persons within a stationary open enclosure	open stationary storing object	bed, bunker, chair, cistern, couch, pit, pool, shelf	Kind of method applied
	CM	storing object for matters within a stationary closed enclosure	enclosed stationary storing object	box, cabinet, cupboard, tank	Kind of matters stored
	CN	storing object for matters or persons within a moveable closed enclosure	moveable storing object	container, drum, elevator bucket, excavator bucket, gas cylinder, lift car	Kind of matters stored
	CP	storing object of thermal energy	thermal energy storing object	calorifier, crystalline tank, gas tank, liquid tank, matter tank	Kind of thermal energy
	CQ	storing object of mechanical energy	mechanical energy storing object	counterweight, elevated mass, flywheel, rubber band, spring	Kind of mechanical energy

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
E		<i>object for emitting</i>	emitting object		Kind of object being emitted and kind of energy source
	EA	<i>emitting object of light</i>	light object	argon lamp, electro luminescent devices, electric lamp, fluorescent lamp, tube, gas lamp, lamp, lamp bulb, laser, liquid lamp, neon lamp, paraffin lamp	Kind of energy source
	EB	<i>emitting object of heat provided by electric energy</i>	electric heating object	arc heating object, electric arc furnace, electric boiler, electric heating surface, electric hot air blower, electric oven, frying plate, heating cable, heat mat, induction heater, induction oven, infrared heater, sauna	Kind of delivery method
	EC	<i>emitting object of coldness provided by electric energy</i>	electric cooling object	compression chiller, electric cold air blower, electric cooling surface	Kind of method
	EE	<i>emitting object of wireless power</i>	wireless power object	capacitive coupler, gamma ray source, inductive power antenna, maser, microwave oven, X-ray source	Kind of method
	EG	<i>emitting object of heat and coldness provided by transfer of thermal energy</i>	thermal energy transfer object	freezer, fridge, heat exchanger, heat pump, Peltier element, refrigerated container, refrigerator, reversible heat pump	Kind of method
	EM	<i>emitting object of heat provided by combustion</i>	combustion heating object	burner, combustion boiler, stove	Kind of object heated
	EP	<i>emitting object of heat provided by thermal energy</i>	thermal heating object	condenser, heating coil, heating panel, heating pipe, heating surface, heating tube, hot air blower, radiator	Kind of method
	EQ	<i>emitting object of coldness provided by thermal energy</i>	thermal cooling object	chiller, condenser, cooler, cooling coil, cooling panel, cooling pipe, cooling surface, cooling tower, cooling tube, evaporator	Kind of method
	ET	<i>emitting object of heat provided by nuclear fission</i>	nuclear powered heating object	boiling water reactor, high-temperature gas-cooled reactor, pebble bed reactor, pressurized water reactor	Kind of output
	EU	<i>emitting object of sub-atomic particles</i>	particle emitting object	alpha-ray device, beta-ray device, neutron-ray device, particle generator, plasma generator	Kind of method
	EV	<i>emitting object of acoustic waves</i>	acoustic wave emitting object	anti-noise loudspeaker, sonar	Kind of method
		<i>object for protecting against the effects of dangerous or undesirable conditions</i>	protecting object		Kind of source
F	FA	<i>protecting object related to overvoltages</i>	overvoltage protecting object	limiter, spark gap surge arrester, surge absorber, varistor surge arrester, zener diode	Kind of method applied

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	FB	<i>protecting object</i> related to earth fault currents	earth fault current protecting object	appliance leakage current interrupter (ALCI), earth fault leakage breaker, earth-leakage circuit-breaker (ELCB), ground fault circuit interrupter (GFCI), ground fault interrupter (GFI), neutral earthing impedance, neutral earthing limiter, neutral earthing reactor, Petersen coil, residual current circuit breaker (RCCB), residual current device	Kind of method applied
	FC	<i>protecting object</i> related to overcurrents	overcurrent protecting object	bimetal, bimetal circuit, fuse, miniature circuit-breaker, overload thermal release, thermal overload relay	Kind of method applied
	FE	<i>protecting object</i> related to electric and/or magnetic fields	field protecting object	concrete wall, electric field shield, electromagnetic field shield, Faraday cage, lead block, metal sheets, magnetic field shield, Mu-metal shielding	Kind of method applied
	FL	<i>protecting object</i> related to pressure	pressure protecting object	expansion tank, expansion vessel, rupture disc, safety damper, safety valve, vacuum breaker	Kind of pressure
	FM	<i>protecting object</i> related to fire	fire protecting object	fire and flue damper, fire blind, fire damper, fire extinguisher, flue damper, fire impregnation, fire insulation, fire protecting coating, fire retardant coating, smoke closure, smoke curtain	Kind of method applied and cause for activation
	FN	<i>protecting object</i> related to mechanical force	mechanical force protecting object	cable protection, impact protection, safety clutch	Kind of method applied
	FQ	<i>protecting object</i> by barrier or obstacle	preventive protecting object	break protection, glare protection, glide protection, guard rail, handrail, lock hatch cover, protective fabric, protective grid, protective mesh, protective rail, protective rod, protective roof, snow guard, splatter protection, suspension guard	Kind of purpose of the prevention
	FR	<i>protecting object</i> related to material erosion	wear protecting object	lubrication object, lubricating oil, wear pad	Kind of method applied
	FS	<i>protecting object</i> related to the local environment	environment protecting object	avalanche shed, cathodic protection, corrosion protection, cement, house, impregnation, impregnation sheet, material separating layer, paint, mortar, plaster, protective seal, seismic vibration control device, sacrificial anode, shed, shelter, snow guard	Kind of method applied
	G	<i>object</i> for providing a controllable flow	generating object		Kind of object flowing and kind of source
	GA	<i>generating object</i> of electric energy powered by mechanical energy	mechanical to electrical energy generating object	AC generator, DC generator, dynamo, generator	Kind of voltage and current form

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
H	GB	<i>generating object of electric energy powered by chemical reaction</i>	chemical to electrical energy generating object	battery, electric battery, fuel cell	Kind of source method applied
	GC	<i>generating object of electric energy from solar energy</i>	solar to electrical energy generating object	crystalline photovoltaic module, solar cell, thin film photovoltaic module	Kind of method applied
	GF	<i>generating object of signals for carrier of information</i>	signal generating object	electromagnetic wave transmitter, laser transmitter, radio-wave transmitter, signal generator, television station	Kind of source distribution method
	GL	<i>generating object continuously of items</i>	continuous transfer object	belt conveyor, chain conveyor, screw conveyor, vibrating patternster, roller conveyor, conveyor	Direction and size of matters
	GM	<i>generating object discontinuously of items</i>	discontinuous transfer object	crane, elevator, hoist, palletizer, stacker, turntable, vibrating feeder, wagon	Kind of method applied
	GP	<i>generating object of liquid</i>	liquid flow generating object	axial flow circulation pump, centrifugal pump, hydraulic ram pump, impeller, liquid velocity pump, lubricator, oiler, peristaltic pump, piston pump, positive displacement pump, radial-flow circulation pump, rotary gear pump, screw pump, vacuum pump	Kind of method applied
	GQ	<i>generating object of gas</i>	gaseous flow generating object	air curtain, closed propeller fan, gas compressor, gas ejector, mechanical fan, open propeller fan, propeller, squirrel cage fan, ventilator	Kind of flow generating method
	GR	<i>generating object of thermal energy from solar energy</i>	solar to thermal energy generating object	flatbed solar panel, solar panel, solar tower	Kind of method applied
	H	<i>object for treating matter</i>	matter processing object		Kind of method applied
	HJ	<i>matter processing object by primary forming</i>	primary forming object	3D-printer, casting tool, chipboard press, press, sintering press	Kind of initial material state
	HK	<i>matter processing object for surface treatment</i>	surface treatment object	air gun sprayer, anodizer, burnishing machine, dishwasher, electrostatic coating machine, hammer peening machine, hoover, oil-coating machine, polisher, sand paper, shower, surface coating machine, surface modification machine, surface preparation machine, ultrasonic degreaser, vapour degreaser, window wiper, wire brush	Kind of method applied

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
HL		<i>matter processing object</i> by joining or assembling	assembling object	assembly robot, chemical joining machine, crimping machine, electric arc welder, friction (inertial) welder, gluing machine, induction brazing machine, mechanical joining machine, pressure (cold) welder, soldering machine, thermal welding machine, ultrasonic welder	Kind of method applied
HM		<i>matter processing object</i> by separating mixed substances by force	force separating object	centrifuge, cyclone, hydrocyclone, settling tank	Kind of method applied
HP		<i>matter processing object</i> by thermally separating mixed substances	thermal separating object	distiller, distillation column, dryer, evaporator	Kind of thermal separating method applied
HQ		<i>matter processing object</i> by mechanically separating mixed substances	mechanical separating object	bag filter, filter, rake, separation grate, sack, skimmer	Kind of mechanical separating method applied
HR		<i>matter processing object</i> by electromagnetically separating mixed substances	electric or magnetic separating object	electrostatic filter, electrostatic separator, magnetic separator	Kind of method applied
HS		<i>matter processing object</i> by chemically separating mixed substances	chemical separating object	absorber, absorption washer, adsorber, electrolyser, ion exchanger	Kind of method applied
HU		<i>matter processing object</i> providing smaller forms of solid material	grinding and crushing object	cutter, crusher, flour mill, mill, stone crusher, waste grinder, water mill	Kind of sorting method applied
HV		<i>matter processing object</i> providing larger forms of substances	agglomerating object	flocculation apparatus, flocculator, pelletizer	Kind of assembly method applied
HW		<i>matter processing object</i> mixing different substances	mixing object	humidifier, kneader, mixer	Kind of method applied
HX		<i>matter processing object</i> providing new material by chemical or biological reaction	reacting object	chemical reactor, fermenter, gasifier	Kind of method applied
		<i>object</i> for treating input signals and providing an appropriate output	information processing object		Kind of signal
KE		<i>information processing object</i> for processing electric signals	electric signal processing object	card writer, central processing unit (CPU), communication device, compact disk writer, computer, data network gateway, distance protection and control unit, Ethernet card, firewall, Firewire card, i/o-device, i/o-module, optical disc writer, PC, personal computer, programmable logic controller (PLC), optical disk writer, remote terminal unit (RTU), remote telecontrol unit (RTU), router, security device, synchronizing device, synchronizing relay, tablet computer, tape recorder, USB card	Kind of functionality

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
K	KF	information processing object for relaying electric signals	electric signal relaying object	coupler, electric network bridge, electrical network switch, repeater, relay, time relay	Kind of functionality
	KG	Information processing object of optical signals	optical signalling object	optical network switch, optical repeater, optical router	Kind of functionality
	KH	information processing object of fluid signals	fluid signalling object	fluid controller, pilot valve	Kind of purpose
	KJ	information processing object of mechanical signals	mechanical signalling object	locking cylinder, key coded device, mechanical regulator	Kind of method
	KZ	information processing object of signals of multiple kinds	multiple kind signalling object	multiple kind switch	Kind of method
	MA	object for providing mechanical movement or force	driving object		Kind of driving force
	MB	driving object in the form of rotational torque, powered by electromagnetic force	electromagnetic rotational driving object	AC motor, asynchronous motor, DC motor, electric motor, induction motor, PM motor, servo-motor, stepper motor, synchronous motor	Kind of movement
	MC	driving object in the form of linear force, powered by electromagnetic force	electromagnetic linear driving object	actuator, electromagnet, linear motor, solenoid	Kind of method
	MD	driving object powered by magnetic force	magnetic force driving object	permanent magnet	Kind of method
	ME	driving object powered by piezoelectric force	piezoelectric driving object	piezoelectric actuator, piezoelectric motor	Kind of method
	ML	driving object powered by mechanical energy	mechanical energy driving object	elastic energy drive, gas turbine, gravity energy drive, roller coaster, spring actuator device, water turbine, wind turbine	Kind of mechanical source
	MM	driving object powered by fluid displacement or pressure	fluid powered driving object	hydraulic cylinder, hydraulic motor, pneumatic cylinder, pneumatic motor	Kind of fluid source
	MS	driving object powered by combustion of fuels	combustion engine	Diesel cycle engine, Otto cycle engine, Wankel engine	Kind of engine
	MT	driving object powered by an external heat source	heat engine	steam engine, Stirling engine	Kind of engine
N	NA	object for enclosing partly or fully another object	covering object		Kind of method
	NA	covering object by filling an opening	infilling object	gasket, gland, grating, grout, pane, panel, sealing joint	Kind of purpose by the filling

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
NB	NC	covering object by closing an opening	closure object	cabinet door, cubicle door, cupboard door, door leaf, faceplate, fuel door, leaf, hatch cover, housing cover, inspection hatch, leaf of large door	Kind of object to close
		covering object by finishing structures	finishing object	aircraft fairing, aircraft skin, belly fairing, car body panel, ceiling finish, cockpit fairing, flooring, grass turf, motorcycle fairing plate, paving, plant mat, roofing, unstressed hull, wall covering, window board, window sill	Kind of object to protect
		covering object for terminating another object	terminating object	bargeboard, ceiling edge, crown, curb, fascia, flaunching, lawn edge, plant bed edge, raised floor edge, wall top	Kind of object to terminate
		covering object by hiding joints and transitions	hiding object	architrave, base shoe, bushing, ceiling lining, eaves lead, flashing, reveal liner, ridge flashing, roof flashing, skirting board, wall corner lining	Kind of method and purpose
		object for providing perceptible information	presenting object		Kind of presentation form and kind of information to be presented
PF		presenting object in visible form of discrete states	visible state indicator	semaphore, signal lamp, traffic light	Kind of method and purpose
PG		presenting object in a visible form of a single scalar variable	scalar display	ampere meter, angle indicator, audio spectrometer, barometer, clock, concentration indicator, cos-phi meter, density indicator, dimension indicator, electromagnetic wave indicator, energy meter, field indicator, flow meter, force indicator, frequency meter, humidity indicator, hygrometer, level indicator, manometer, position indicator, pressure indicator, quantity meter, resistivity indicator, sight glass, temperature indicator, var-hour meter, varmeter, voltmeter, watt-hour meter, wattmeter	Quantity to be presented
PH		presenting object in visible form by pictures, symbols, text or physical characteristics	graphical display	blackboard, display, marking, marking post, printer, projector, reference point, sign, traffic sign, whiteboard	Kind of presentation means
PJ		presenting object in audible form	acoustic device	bell, horn, loudspeaker	Kind of method
PK		presenting object in tactile form	tactile device	braille text sign, free height warning, road grooves, vibrator	Kind of method
PL		presenting object in an ornamental form	ornamental object	carpet, cornice, figure, frieze, picture, pilaster, stucco	Kind of method applied
PZ		presenting object in multiple forms	multiple form presenting object	audio-visual alarm, television set	Kind of method applied

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
Q		<i>object</i> for controlling access or flow	controlling object		Kind of object flowing and kind of method
	QA	<i>controlling object</i> of electric current in an electric circuit	electric controlling object	contactor, circuit breaker, defibrillator, electronic power switch, motor starter, solid state power transistor, thyristor, tube power transistor	Kind of switching method
	QB	<i>controlling object</i> by separating electric circuits	electric separating object	disconnector, fuse-switch disconnector, fused disconnector, fuseless disconnector, load-switch disconnector, switch-fuse disconnector	Kind of purpose
	QC	<i>controlling object</i> by earthing electric circuits	electric earthing object	earthing switch	Kind of purpose
	QM	<i>controlling object</i> of fluids on/off in sealed enclosures	sealed fluid switching object	draw-off tap, faucet, gas shutoff valve, liquid shutoff valve, on-off damper, plug	Kind of fluids
	QN	<i>controlling object</i> for varying the flow of fluids in sealed enclosures	sealed fluid varying object	control damper, gas control valve, liquid control valve	Kind of fluids
	QP	<i>controlling object</i> of fluids in open environment	open flow controlling object	dam plate, liquid gate, lock gate, nose strake, plug, rudder, strake, ventral strake, vortex generator, wing strake	Kind of fluids
	QQ	<i>controlling object</i> to a space	space access object	door, escape hatch, gate, hatch, large door, openable bar, rail scotch block, window, window unit	Kind of purpose of the space access object
	QR	<i>controlling object</i> of solid substance	solid substance flow varying object	dosing machine, flap gate valve, iris valve, rotary air lock valve	Kind of method
	QS	<i>controlling object</i> for mechanical movement	mechanical movement controlling object	latch, lock, railroad switch, track switch	Kind of method
	QZ	<i>controlling object</i> in electrical circuits, utilising different measures	multiple measure controlling object	earthing and disconnecting switch	Kind of purpose
		<i>object</i> for restricting or stabilising	restricting object		Kind of object flowing and kind of constraint
	RA	<i>restricting object</i> by restricting a flow of electric energy	electricity restricting object	diode, limiter, reactor, resistor, series reactor	Kind of method
	RB	<i>restricting object</i> by stabilising a flow of electric energy	electricity stabilising object	phase compensator, power equaliser, power factor correction system, power factor correction unit, power filter, uninterruptible power supply, UPS, voltage compensator	Kind of method

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	RF	<i>restricting object</i> by stabilising a signal	signal stabilising object	ferrite, signal equaliser, signal filter	Kind of method
	RL	<i>restricting object</i> by restricting movements	movement restricting object	brake, door chain, rail anchor, rubber bushing, security chain, shock absorber, speed bump	Purpose of the mechanical limiting object
	RM	<i>restricting object</i> by restricting a return flow of matter	return flow restricting object	check damper, flap, non-return valve, stench trap	Kind of possible return flow
	RN	<i>restricting object</i> by restricting a guided flow of matter	flow restrictor	adjustable nozzle, air intake, air outlet, diffuser, draw-off tap, fixed nozzle, orifice plate, regulating damper, regulation valve, shower, shower head, solids regulating valve, ventilation inlet, ventilation outlet	Kind of flow and method
	RQ	<i>restricting object</i> of the local environment	local climate stabilising object	brick lining, climate membrane, curtain, insulation, louvered blind, membrane, noise barrier, noise protection, screen, screen wall, shutter, sound baffle, weed control fabric	Kind of effect and method applied
	RU	<i>restricting object</i> by restricting access to an area	access restricting object	bar, bird mesh, bollard, entrance management gate machine, fence, gate machine, one-way door, rodent barrier, rat stop device, stock guard, ticket gate	Kind of method applied
		<i>object</i> for detecting a human action and providing an appropriate response	human interaction object		Kind of actuating operation
	SF	<i>human interaction object</i> by eye focusing	face interaction object	eye actuator for positioning operations, eye focus reader	Kind of method
	SG	<i>human interaction object</i> to a hand action	hand interaction object	2- or 3-position enabling device, emergency pull wire, emergency push button, grip handle, key, key switch, lever handle, mechanical lever, potentiometer, pull handle, push handle, rotary switch, turn handle, two-hand control	Kind of method
	SH	<i>human interaction object</i> to a foot position	foot interaction object	2- or 3-position enabling device, pedal switch	Kind of method
	SJ	<i>human interaction object</i> by finger operation	finger interaction object	2-position switch, flip switch, hold-to-run device, keyboard, pushbutton, pushbutton switch, touch actuator, touchpad, turning wheel	Kind of method
	SK	<i>human interaction object</i> by its movement or positioning	movement interaction object	joystick, mouse, light pen, roller ball	Kind of method
	SZ	<i>human interaction object</i> with multiple kinds of interacting means	multi-interaction device	gamepad, game controller, joystick, operating panel	
	T	<i>object</i> for transforming	transforming object		Kind of object changed and kind of transformation

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	TA	<i>transforming object</i> of electric energy while retaining AC or DC	electric energy transforming object	DC/DC converter, frequency converter, isolating transformer, phase shifter, power drive, transformer	Kind of characteristics transformed
	TB	<i>transforming object</i> of electric energy changing between AC and DC	electric energy converting object	bidirectional converter, inverter, power supply, rectifier	Kind of transformation
	TC	<i>transforming object</i> of electric energy from AC and DC to AC or DC	universal power supply	power supply, universal AC power supply, universal DC power supply	Kind of supply output
	TF	<i>transforming object</i> of signal	signal converting object	aerial, amplifier, antenna, cell phone, inductive signal antenna, IR diode, IR sender, mobile phone, optical receiver/transmitter, optocoupler, oscillator, phone, RF signal antenna, signal antenna, signal converter, telephone, transducer	Kind of conversion
	TL	<i>transforming object</i> of mechanical energy	mechanical energy transforming object	automatic gear, control coupling, indexing gear, gear, lever, speed converter, torque converter	Kind of transformation
	TM	<i>transforming object</i> of matter by mass reduction	mass reduction object	boring machine, drilling machine, electron discharge sawing machine, etching machine, gas cutting machine, grinder, immersion chemical mill, plasma arc cutting machine, punching machine, saw, spray chemical mill, thermal cutter, turning machine	Kind of process
	TP	<i>transforming object</i> of matter by shape reforming	matter reshaping object	bending machine, cold forging machine, curling machine, electrohydraulic forming machine, electromagnetic forming machine, explosive forming machine, extruder, forging machine, hot forging machine, knurling machine, rolling machine, seaming machine, sheet rolling machine, shear spinning machine, thread forming machine, tube drawing machine, wire drawing machine	Kind of process
	TR	<i>transforming object</i> of radiation by photosynthesis	organic plant	bush, climber, flower, grass, herb, shrub, tree, vegetable plant	Kind of woodiness
		<i>object</i> for localising other objects	holding object		Kind of positioning
	UA	<i>holding object</i> by fixing at a defined position	positioning object	batten, bicycle stand, cable access, cable entry, cable gland, chuck, clamp, dog, espalier, flange, insulator, jaw, lathe chuck, lattice, light fixture, luminaire, rail gauge, stake, stair stringer, stringer, track gauge, vehicle stand	Kind of object to be fixed

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	UB	<i>holding object</i> by carrying	carrying object	cable duct, cable ladder, cable rack, cable tray, catwalk, conduit, duct channel, electricity pylon, equipment support structure, hanger, hanging bracket, mast, operating table, platform, pole, portal, post, rung, step, strap, string, transmission tower, supporting bracket, table, tread	Kind of method
	UC	<i>holding object</i> by enclosing	enclosing object	cabinet, cooker hood, cubicle, electrical enclosure, electric panel, plant soil, hose reel cubicle, safety cabinet, sensor housing, service chamber, server rack, sub-rack	Kind of method
	UL	<i>holding object</i> by forming a structural support	structural supporting object	abutment, aggregate base, arch, baluster, base grade, base course, base layer, beam, bearing plate, bilge plate, binding layer, block, brick, bridge deck, bridge pylon, building foundation, buttress, cantilever wall, column, compression member, concrete deck, concrete element, console, corbel, counterfort, deck, dome, earth anchor, facing wall, floor slab, foundation beam, foundation block, foundation column, foundation slab, foundation wall, gravity wall, ground anchor, hole deck, hull plate, lamina, load-bearing wall, machine foundation, pile, pillar, pipe bridge, pipe tunnel, plate, plinth, pressure distribution, retaining wall plate, rock bolt, rope, sheet piling, slab, slab plate, stone, stressed skin panel, strut, support wedge, tension brace, tie, vault, wall, wall plate	Kind of form and function
	UM	<i>holding object</i> by reinforcement	reinforcing object	concrete injection, concrete lining, concrete spurring, diagonal bonding, earth pressure embankment, horizontal rail, lime column, pavement reinforcement, rebar mesh, reinforcement bar, reinforcing mass layer, reinforcing matter, reinforcing mesh, reinforcing rod, security strike plate, soil vertical drain, splice, splice plate, stabilizing cable, stiffener	Kind of method
	UN	<i>holding object</i> by framing other objects	framing object	door frame, fixed frame, glazing bar, glazing bar frame, movable frame, threshold, window frame, windowpane frame	Kind of method
	UP	<i>holding object</i> by jointing devices	jointing object	ball bearing, bearing, cement, chemical joint, hinge, roller bearing, sliding object, structural joint	Kind of method
	UQ	<i>holding object</i> by fastening	fastening object	anchor plate, bolt, chemical bond, elastic fastening, expansion joint, movement joint, mounting bracket, nail, nut, rail fastener, rivet, screw	Kind of method
	UT	<i>holding object</i> by levelling	levelling object	excavation, filling, patterned ground	Kind of method

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	UU	<i>holding object</i> by existing ground	existing ground	cohesive soil, filled material, friction soil, organic soil, rock	Kind of material
W		<i>object</i> for leading from one place to another	guiding object		Kind of flow and kind of technology
	WB	<i>guiding object</i> of high voltage electric energy	high voltage electric energy guiding object	high voltage busbar, high voltage bushing, high voltage cable, high voltage wire	Kind of method
	WD	<i>guiding object</i> of low voltage electric energy	low voltage electric energy guiding object	low voltage busbar, low voltage bushing, low voltage cable, low voltage wire	Kind of method
	WE	<i>guiding object</i> of a reference potential	reference potential guiding object	earthing cable, earthing rail, equipotential bonding cable, equipotential bonding rail	Kind of method
	WG	<i>guiding object</i> for electric signals	electric signal guiding object	control cable, data bus, data cable, electric signal bushing	Kind of purpose
	WH	<i>guiding object</i> for light	light guiding object	fibre optical cable, lens, light reflector, mirror, optical light fibre, optical light guide, optical wave guide	Kind of flow
	WJ	<i>guiding object</i> for sound	sound guiding object	sound reflector	Kind of method
	WL	<i>guiding object</i> of solid matter in open enclosure	solid matter guiding object	chute, inclined plane, roller table, tube conveyer	Kind of method
	WM	<i>guiding object</i> of fluid flow in open enclosure	open enclosure guiding object	aeration layer, aeration pipe, aeration well, drainage layer, drainpipe, drain liquid flashing, drip nose, eaves gutter, eaves trough, gutter, gutter drip, infiltration chamber, infiltration layer, infiltration pipe, radon well, rain gutter	Kind of method
	WP	<i>guiding object</i> of matter flow in closed enclosure	closed enclosure guiding object	chimney, duct, hose, pipe	Kind of form applied
	WQ	<i>guiding object</i> of mechanical energy	mechanical energy guiding object	axle, chain, cogwheel, drive axle, drive belt, drive chain, drive link, gearwheel, hydraulic hose, hydraulic pipe, moving line, pneumatic hose, pneumatic pipe, toothed bar, v-belt, wheel	Kind of method
	WR	<i>guiding object</i> for track bound objects	rail object	rail track, track, track crossing	Kind of method
	WV	<i>guiding object</i> for thermal energy	thermal energy guiding object	heat sink, thermal conductor, thermal paste	Kind of method
	WZ	<i>guiding object</i> with multiple kinds of flows	multiple flow guiding object	umbilical, umbilical cable	Kind of method
X		<i>object</i> for interfacing an object	interfacing object		Kind of object flowing and kind of method

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	XB	<i>interfacing object</i> for high voltage electric power	high voltage connecting object	clamp, cable head, high voltage cable joint, high voltage connector, high voltage socket, high voltage terminal, high voltage terminal box, junction box	Kind of method
	XD	<i>interfacing object</i> for low voltage electric power	low voltage connecting object	electric terminal, low voltage cable joint, low voltage plug, low voltage power socket, low voltage terminal, plug, power distributor, power outlet, socket, terminal box	Kind of method
	XE	<i>interfacing object</i> for earth or reference potential	potential connecting object	collector, earth electrode, FB terminal, FE terminal, functional bonding terminal, functional earthing terminal, PB terminal, PE terminal, protective bonding terminal, protective conductor terminal, protective earthing conductor terminal	Kind of potential and method
	XG	<i>interfacing object</i> for electric signals	electric signal connecting object	hub, patch panel, signal distributor, signal socket, terminal	Kind of method
	XH	<i>interfacing object</i> of optical fibres	light connecting object	fixed light fibre socket, optical plug, optical socket	Kind of method
	XK	<i>interfacing object</i> collecting for feeding into a flow	collecting interfacing object	bidet, drip cup, floor drain, sink, toilet, urinal, WC	Kind of object collected
	XM	<i>interfacing object</i> for sealed material flow	sealed flow connecting object	chamber, fire hose coupler, glue fitting, hose coupler, hose fitting, hose flange, pipe coupler, pipe fitting, pipe flange, press fitting, solder fitting, tube fitting, tube flange	Kind of method
	XN	<i>interfacing object</i> for continuous transfer of mechanical forces	non-detachable coupling	box coupling, buffer-and-chain coupler, cardan joint, link-and-pin coupler, flange coupler, flexible coupling, Hardy-Spicer joint, Hirth coupler, Hirth coupling, Hirth joint, Hooke's joint, sleeve coupling, split-muff coupler, U-joint, universal coupling	Kind of method
	XP	<i>interfacing object</i> for interruptible transfer of mechanical forces	detachable coupling	centrifugal clutch, fluid coupling, freewheel clutch, friction clutch, hydraulic clutch, magnetic head hoisting device, magnetic hoist, overrunning clutch	Kind of method
	XS	<i>interfacing object</i> connecting levels	level connecting object	fireman's pole, flight of stairs, gangway, ladder, landing, ramp	Kind of method
	XT	<i>interfacing object</i> linking space	space linking object	box-out, cavity, hole, opening	Kind of method
	XZ	<i>interfacing object</i> with multiple kinds of flows	multiple flow connector object	multi connector	Kind of method

Table 3 – Complete classification scheme for inherent function of objects

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
B	BA		object for picking up information and providing a representation	sensing object		Kind of quantity
			sensing object for electric potential	electric potential sensing object		Kind of output signal
		BAA	electric potential sensing object, with scalar output	voltage transformer	coupling capacitor, measuring voltage transformer	
		BAB	electric potential sensing object, with Boolean output	voltage relay	measuring voltage relay	
	BB		sensing object for resistivity or conductivity	resistivity sensing object		Kind of flow and output signal
		BBA	resistivity sensing object for electric current flow, with scalar output	electric resistivity sensor		
		BBB	resistivity sensing object for electric current flow, with Boolean output	electric resistivity detector		
		BBC	resistivity sensing object for thermal flow, with scalar output	thermal resistivity sensor		
		BBD	resistivity sensing object for thermal flow, with Boolean output	thermal resistivity detector		
	BC		sensing object for electric current	electric current sensing object		Kind of output signal
		BCA	electric current sensing object, with scalar output	current transformer	measuring current transformer	
		BCB	electric current sensing object, with Boolean output	current relay	electronic overload relay, measuring current relay, overload relay	
			sensing object for density	density sensing object		Kind of output signal
	BD	BDA	density sensing object, with scalar output	density transmitter	aerometer, density sensor, hydrometer	
		BDB	density sensing object, with Boolean output	density switch	density sensor	
			sensing object for field	field sensing object		Kind of output signal
	BE	BEA	field sensing object for electric field, with scalar output	electric field sensor		
		BEB	field sensing object for electric field, with Boolean output	electric field detector		
		BEC	field sensing object for magnetic field, with scalar output	magnetic field sensor		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
			<i>field sensing object</i> for magnetic field, with Boolean output	magnetic field detector	reed relay, reed switch	
	BF	BED	<i>sensing object</i> for flow	flow sensing object		Kind of output signal
		BFA	<i>flow sensing object</i> , with scalar output	flow transmitter	flow sensor, gas flow sensor, liquid flow sensor, matter flow sensor, water flow sensor	
		BFB	<i>flow sensing object</i> , with Boolean output	flow switch	gas flow switch, matter flow switch	
	BG		<i>sensing object</i> of spatial dimension and/or position	physical dimension sensing object		Kind being sensed and kind of output signal
		BGA	<i>physical dimension sensing object</i> of position, with scalar output	position transmitter	position sensor, presence locator, radar, wind direction sensor	
		BGB	<i>physical dimension sensing object</i> of position, with Boolean output	position switch	movement detector, movement sensor (PIR), position sensor, presence indicator	
		BGC	<i>physical dimension sensing object</i> of length, with scalar output	distance transmitter	laser distance sensor, position sensor, visibility sensor	
		BGD	<i>physical dimension sensing object</i> of length, with Boolean output	distance switch	laser distance sensor, laser distance sensing switch, movement detector, movement sensor (PIR), position sensor, presence indicator, visibility detector	
		BGE	<i>physical dimension sensing object</i> of angle or direction, with scalar output	angle transmitter	alignment sensor, end stop, position sensor, position transmitter, rotary encoder, wind direction indicator	
		BGF	<i>physical dimension sensing object</i> of angle or direction, with Boolean output	angle switch	alignment threshold detector, movement detector, movement sensor (PIR), position sensor, presence indicator, radar	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		BGG	physical dimension sensing object of physical object	object scanner	2D-scanner, 3D-scanner, coordinates scanner, laser scanner	
	BH		sensing object for energy	energy sensing object		Kind of energy
		BHA	energy sensing object of flow with defined energy density	flow energy meter	energy cooling meter, energy meter, energy sensor, gas energy meter	
		BHB	energy sensing object of thermal flow with defined heat capacity	thermal energy meter	condensate sensor, energy cooling meter, energy meter, energy sensor	
		BHC	energy sensing object of electricity flow	electric energy meter	kWh sensor	
	BJ		sensing object for power	power sensing object		Kind of output signal
		BJA	power sensing object, with scalar output	power meter	kW meter	
		BJB	power sensing object, with Boolean output	power limit switch		
	BK		sensing object for time	time sensing object		Kind of output signal
		BKA	time sensing object, with scalar output	time sensor	clock, time information device	
		BKB	time sensing object, with Boolean output	timer switch	time counter	
	BL		sensing object for level	level sensing object		Kind of output signal
		BLA	level sensing object, with scalar output	level transmitter	level sensor, liquid level sensor	
		BLB	level sensing object, with Boolean output	level switch	liquid level switch	
	BM		sensing object for humidity	humidity sensing object		Kind of output signal
		BMA	humidity sensing object with scalar output	humidity transmitter	humidity sensor	
		BMB	humidity sensing object, with Boolean output	humidity switch	humidity sensor	
	BP		sensing object for pressure	pressure sensing object		Kind of output signal
		BPA	pressure sensing object utilizing one port for absolute pressure sensing, with scalar output	absolute pressure transmitter	absolute pressure sensor, manometer, pressure monitor, pressure sensor, pressure transducer	
		BPB	pressure sensing object utilizing one port for absolute pressure sensing, with Boolean output	absolute pressure switch	pressure switch	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		BPC	<i>pressure sensing object</i> utilizing two ports for differential pressure sensing, with scalar output	differential pressure transmitter	differential pressure sensor, pressure sensor, relative pressure sensor	
		BPD	<i>pressure sensing object</i> utilizing two ports for differential pressure sensing, with Boolean output	differential pressure switch	pressure sensor, pressure switch, relative pressure detector, relative pressure switch	
	BQ		<i>sensing object</i> for substance concentration	concentration sensing object		Kind of object and kind of output signal
		BQA	<i>concentration sensing object</i> of gas, with scalar output	gas sensor	CO concentration sensor, CO ₂ concentration sensor, NH ₃ concentration sensor	
		BQB	<i>concentration sensing object</i> of gas, with Boolean output	gas detector	concentration detection switch	
		BQC	<i>concentration sensing object</i> liquid with, scalar output	liquid sensor	concentration sensor, fog sensor, petrol concentration sensor, visibility sensor	
		BQD	<i>concentration sensing object</i> of liquid, with Boolean output	liquid detector	concentration detection switch, fog detector, visibility detector	
		BQE	<i>concentration sensing object</i> of solid matter, with scalar output	solid matter sensor	concentration sensor, smoke sensor, turbidity sensor, visibility sensor	
		BQF	<i>concentration sensing object</i> of solid matter, with Boolean output	solid matter detector	concentration detection switch, smoke detector, smoke switch, turbidity detector, visibility detector	
	BR		<i>sensing object</i> for radiation	radiation sensing object		Kind of radiation and kind of output signal
		BRA	<i>radiation sensing object</i> of visible electromagnetic waves, with scalar output	light sensor		
		BRB	<i>radiation sensing object</i> of visible electromagnetic waves, with Boolean output	light detector	light curtain, light transmitter, line detector, low-light relays, lux sensor, photocell	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		BRC	<i>radiation sensing object</i> for non-visible electromagnetic waves, with scalar output	electromagnetic wave sensor	gamma-radiation detector, IR-sensor, radar-sensor, UV-sensor	
		BRD	<i>radiation sensing object</i> for non-visible electromagnetic waves, with Boolean output	electromagnetic wave detector		
		BRE	<i>radiation sensing object</i> of nuclear particles, with scalar output	radiation counter	Geiger meter	
		BRF	<i>radiation sensing object</i> of nuclear particles, with Boolean output	radiation detector		
	BS		<i>sensing object</i> for time-rate	time-rating object		Kind of time object sensed and kind of output signal
		BSA	<i>time-rating object</i> of non-rotational cycles, with scalar output	cycle rate transmitter	cycle rate sensor, frequency transmitter	
		BSB	<i>time-rating object</i> of non-rotational cycles, with Boolean output	cycle rate detecting switch		
		BSC	<i>time-rating object</i> of distance, with scalar output	speed sensing transmitter	movement transmitter, speed sensor	
		BSD	<i>time-rating object</i> of distance, with Boolean output	speed detecting switch	movement detector	
		BSE	<i>time-rating object</i> of rotation, with scalar output	tachometer	rotation speed sensor	
		BSF	<i>time-rating object</i> of rotation, with Boolean output	rotation speed relay		
		BSG	<i>time-rating object</i> of speed, with scalar output	accelerometer transmitter	seismic sensor	
		BSH	<i>time-rating object</i> of speed, with Boolean output	accelerometer relay	seismic switch, shake switch	
			<i>sensing object</i> for temperature	temperature sensing object		Kind of output signal
		BTA	<i>temperature sensing object</i> , with scalar output	temperature transmitter	temperature sensor	
		BTB	<i>temperature sensing object</i> , with Boolean output	temperature switch	temperature detector	
	BU		<i>sensing object</i> for multiple quantities	multi-quantity sensing object		Kind of output signal
		BUA	<i>multi-quantity sensing object</i> , with scalar output(s)	multi-sensor	multimeter	
		BUB	<i>multi-quantity sensing object</i> , with Boolean output(s)	multi-detector	Buchholz relay, distance protection relay, impedance protection relay, negative phase-sequence relay	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
BW			sensing object for weight, force or torque	force sensing object		Kind of object sensed and kind of output signal
		BWA	force sensing object of weight, with scalar output	weight transmitter	load cell, weight sensor	
		BWB	force sensing object of weight, with Boolean output	weight detecting switch		
		BWC	force sensing object of force, with scalar output	force value transmitter	force sensor	
		BWD	force sensing object of force, with Boolean output	force detecting switch	force sensor	
		BWE	force sensing object of torque, with scalar output	torque value transmitter	torque sensor	
		BWF	force sensing object of torque, with Boolean output	torque switch	torque sensor	
BX			sensing object of sound and/or visual appearance	audio-visual sensing object		Kind of output signal
		BXA	audio-visual sensing object of sound, with scalar output	acoustic sensor	acoustic survey device, microphone	
		BXB	audio-visual sensing object of sound, with Boolean output	acoustic detector	glass breakage detector	
		BXC	audio-visual sensing object of visual appearance, with scalar output	image sensor	camera, CCTV, PTZ camera, scanner, video camera	
		BXD	audio-visual sensing object of visual appearance, with Boolean output	image detector	face recognition device, finger-print reader, iris reader	
BY			sensing object of stored information	information sensing object		Kind of method
		BYA	Information sensing object by electrical connection	chip reader	chip card reader	
		BYB	Information sensing object by electromagnetic field	electromagnetic reader	magnetic stripe reader, RFC reader, RFID reader, tape reader	
		BYC	Information sensing object by light	optical reader	barcode reader, optical disk reader, QR-reader	
BZ			sensing object for incidents or amounts	incident sensing object		Kind of incidents or amounts sensed
		BZA	incident sensing object detecting the number of incidents, with scalar output	counter		
		BZB	incident sensing object detecting an incident, with Boolean output	threshold detector		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		BZC	<i>incident sensing object</i> detecting the presence of humans, with Boolean output	person detector	presence detector	
		BZD	<i>incident sensing object</i> detecting the presence of matters, with Boolean output	matter detector		
C			<i>object</i> for storing for subsequent retrieval	storing object		Kind of object being stored and the method applied
	CA		<i>storing object</i> for electric energy within an electrostatic field	capacitive storing object		Kind of method applied
		CAA	<i>capacitive storing object</i> for electric charge	capacitor		
	CB		<i>storing object</i> for electric energy within an electromagnetic field	inductive storing object		Kind of method applied
		CBA	<i>inductive storing object</i> for inductive charge	inductor		
	CC		<i>storing object</i> for electric energy within an electrochemical substance	electrochemical storing object		Kind of method applied
		CCA	<i>electrochemical storing object</i> by reversible reactions	rechargeable battery		
	CF		<i>storing object</i> for information	information storing object		Kind of method applied
		CFA	<i>information storing object</i> on a carrier medium	information storing media		
	CL		<i>storing object</i> for matters or persons within a stationary open enclosure	open stationary storing object		Kind of method applied
		CLA	<i>open stationary storing object</i> for fluids	pool	bunker, cistern, pit	
		CLB	<i>open stationary storing object</i> for solid objects	shelf		
		CLC	<i>Open stationary storing object</i> for persons	seat	bed, chair, couch	
	CM		<i>storing object</i> for matters within a stationary closed enclosure	enclosed stationary storing object		Kind of matters stored
		CMA	<i>enclosed stationary storing object</i> for fluids	tank		
		CMB	<i>enclosed stationary storing object</i> for solid matters	box	cabinet, cupboard	
	CN		<i>storing object</i> for matters or persons within a moveable closed enclosure	moveable storing object		Kind of matters stored

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		CNA	moveable storing object for solid matters or persons	container	bucket, elevator bucket, excavator bucket, lift car	
		CNB	moveable storing object for gas	gas cylinder		
		CNC	moveable storing object for liquid	drum		
CP			storing object of thermal energy	thermal energy storing object		Kind of thermal energy
		CPA	thermal energy storing object of liquid	liquid tank	calorifier	
		CPB	thermal energy storing object of gas	gas tank		
		CPC	thermal energy storing object of solid matter	matter tank		
		CPD	thermal energy storing object of state changing material	crystalline tank		
CQ			storing object of mechanical energy	mechanical energy storing object		Kind of mechanical energy
		CQA	mechanical energy storing object in the form of kinetic energy	flywheel		
		CQB	mechanical energy storing object in the form of elastic energy	spring	rubber band	
		CQC	mechanical energy storing object in the form of gravitational energy	counterweight	elevated mass	
			object for emitting	emitting object		Kind of object being emitted and kind of energy source
EA			emitting object of light	light object		Kind of energy source
		EAA	light object by electricity	electric lamp	argon lamp, electro luminescent devices, fluorescent lamp, fluorescent tube, lamp, lamp bulb, laser, neon lamp	
		EAB	light object by gas combustion	gas lamp		
EB		EAC	light object by liquid combustion	liquid lamp	paraffin lamp	
			emitting object of heat provided by electric energy	electric heating object		Kind of delivery method
		EBA	electric heating object delivered by fluid	electric boiler		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		EBB	electric heating object delivered by a surface	electric heating surface	frying plate, heat mat, sauna	
		EBC	electric heating object delivered by a cable	heating cable		
		EBD	electric heating object delivered by forced air	electric hot air blower		
		EBE	electric heating object delivered by an electric arc	arc heating object	electric arc furnace	
		EBF	electric heating object delivered by a current flow	induction heater	induction oven	
		EBG	electric heating object delivered by infrared radiation	infrared heater		
		EBH	electric heating object delivered by surrounding surfaces	electric oven		
			emitting object of coldness provided by electric energy	electric cooling object		Kind of method
EC		ECA	electric cooling object applying a cooling surface	electric cooling surface		
		ECB	electric cooling object applying forced air	electric cold air blower		
		ECC	electric cooling object utilizing phase changing	compression chiller		
			emitting object of wireless power	wireless power object		Kind of method
		EEA	wireless power object utilizing inductive coupling	inductive power antenna		
		EEB	wireless power object utilizing microwaves	magnetron	maser, microwave oven	
		EEC	wireless power object utilizing x-rays	X-ray source		
		EED	wireless power object utilizing gamma rays	gamma ray source		
EE		EEE	wireless power object utilizing capacitive coupling	capacitive coupler		
			emitting object of heat and coldness provided by transfer of thermal energy	thermal energy transfer object		Kind of method
		EGA	thermal energy transfer object utilizing phase changing	heat pump	freezer, fridge, reefer, refrigerated container, refrigerator, reversible heat pump	
		EGB	thermal energy transfer object utilizing Peltier effect	Peltier element		
		EGC	thermal energy transfer object between flows by means of an intermediate material	heat exchanger		
			emitting object of heat provided by combustion	combustion heating object		Kind of object heated
		EMA	combustion heating object for heating of space	stove		
EG						
EM						

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		EMB	combustion heating object for heating of fluid	combustion boiler		
		EMC	combustion heating object for heating of solid matter	burner		
EP		EPA	emitting object of heat provided by thermal energy	thermal heating object		Kind of method
			thermal heating object delivered by a permeable heated surface	heating surface		
			thermal heating object delivered by heated fluid	heating tube	heating coil, heating pipe	
			thermal heating object delivered by a non-permeable heated surface	heating panel	condenser, radiator	
			thermal heating object delivered by forced air	hot air blower		
EQ		EQA	emitting object of coldness provided by thermal energy	thermal cooling object		Kind of method
			thermal cooling object applying a permeable cold surface	cooling surface		
			thermal cooling object applying a non-permeable cold surface	cooling panel	condenser, cooling tower, evaporator	
			thermal cooling object applying forced air	chiller		
			thermal cooling object providing cold fluid	cooler		
ET		EQE	thermal cooling object applying chilled liquid in tubes	cooling tube	cooling coil, cooling pipe	
			emitting object of heat provided by nuclear fission	nuclear powered heating object		Kind of output
			nuclear powered heating object providing hot water	boiling water reactor		
			nuclear powered heating object providing steam fluid	pressurized water reactor		
			nuclear powered heating object providing hot gas	high-temperature gas-cooled reactor	pebble bed reactor	
EU		EUA	emitting object of sub-atomic particles	particle emitting object		Kind of method
			particle emitting object being ionized	plasma generator		
			particle emitting object being non-ionized	particle generator	alpha-ray device, beta-ray device, neutron-ray device	
EV		EVB	emitting object of acoustic waves	acoustic wave emitting object		Kind of method
			acoustic wave emitting object utilizing ultrasonic frequencies	sonar		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3		anti-noise loudspeaker		
F		EVB	acoustic wave emitting object utilizing audible frequencies for noise cancellation			
			object for protecting against the effects of dangerous or undesirable conditions	protecting object		Kind of source
	FA		protecting object related to overvoltages	overvoltage protecting object		Kind of method applied
		FAA	overvoltage protecting object by a spark gap	spark gap surge arrester	limiter	
		FAB	overvoltage protecting object by a varistor	varistor surge arrester	limiter	
		FAC	overvoltage protecting object by a zener diode	zener diode	limiter	
		FAD	overvoltage protecting object by surge absorption	surge absorber		
FB			protecting object related to earth fault currents	earth fault current protecting object		Kind of method applied
		FBA	earth fault current protecting object that monitors an electric network and switches off in the event of earth fault currents	residual current device	appliance leakage current interrupter (ALCI), earth fault leakage breaker, earth-leakage circuit-breaker (ELCB), ground fault circuit interrupter (GFCI), ground fault interrupter (GFI), residual current circuit breaker (RCCB)	
		FBB	earth fault current protecting object that limits the value of an earth fault current	neutral earthing limiter	neutral earthing reactor, neutral earthing impedance, Petersen coil	
FC			protecting object related to overcurrents	overcurrent protecting object		Kind of method applied
		FCA	overcurrent protecting object that by fusing opens the circuit in which it is inserted by breaking the current when this exceeds a given value for a sufficient time	fuse		
		FCB	overcurrent protecting object capable of making, carrying and breaking currents under normal circuit conditions and also making, carrying for a specified time, and automatically breaking currents under specified abnormal circuit conditions NOTE This class is intended for circuit-breakers such as those defined in accordance with IEC 60898 series.	miniature circuit-breaker		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		FCC	overcurrent protecting object that opens the circuit in which it is inserted by interrupting the current when this exceeds a given value for a sufficient time	bimetal	bimetal circuit-breaker, overload thermal release, thermal overload relay	
	FE		protecting object related to electric and/or magnetic fields	field protecting object		Kind of method applied
		FEA	field protecting object of electric fields	electric field shield	Faraday cage	
		FEB	field protecting object of magnetic fields	magnetic field shield	Mu-metal shielding (against static or low-frequency magnetic fields)	
		FEC	field protecting object of electromagnetic fields	electromagnetic field shield	concrete wall, Faraday cage, lead block, metal sheets	
	FL		protecting object related to pressure	pressure protecting object		Kind of pressure
		FLA	pressure protecting object releasing steam or liquid when the pressure exceeds a set limit value	safety valve		
		FLB	pressure protecting object opening or closing an air flow when the pressure is above or below a set limit value	safety damper		
		FLC	pressure protecting object preventing vacuum	vacuum breaker		
		FLD	pressure protecting object that breaks open irreversibly in the event of excessive pressure difference	rupture disc		
		FLE	pressure protecting object provided by a volume expansion	expansion tank	expansion vessel	
	FM		protecting object related to fire	fire protecting object		Kind of method applied and cause for activation
		FMA	fire protecting object closing an air flow on detection of fire	fire damper		
		FMB	fire protecting object opening or closing an air flow on detection of smoke	flue damper		
		FMC	fire protecting object closing an air flow on detection of smoke and/or fire	fire-and-flue damper		
		FMD	fire protecting object for manual operation	fire extinguisher		
		FME	fire protecting object closing a passage for preventing spread of smoke and/or fire	fire blind		
		FMF	fire protecting object dividing an area into smoke zones	smoke curtain		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3	fire protecting object closing a hole for preventing spread of fire fire protecting object by a surface cover fire protecting object by a surface coating fire protecting object by impregnation	smoke closure		
		FMG		fire insulation		
		FMH		fire retardant coating	fire protecting coating	
		FMJ		fire impregnation		
		FMK				
	FN		protecting object related to mechanical force	mechanical force protecting object		Kind of method applied
		FNA	mechanical force protecting object providing a disconnection when a torque becomes too high	safety clutch		
		FNB	mechanical force protecting object absorbing impact	impact protection	cable protection	
	FQ		protecting object by barrier or obstacle	preventive protecting object		Kind of purpose of the prevention
		FQA	preventive protecting object against objects passing	protective mesh	protective grid	
		FQB	preventive protecting object against objects or matter sliding or drifting	glide protection	snow guard	
		FQC	preventive protecting object against falling	protective rod	handrail, suspension guard	
		FQD	preventive protecting object against falling out or colliding	protective rail	guard rail, protective roof	
		FQE	preventive protecting object against physical penetration	protective fabric		
		FQF	preventive protecting object against glare	glare protection		
		FQG	preventive protecting object against splatter	splatter protection		
		FQH	preventive protecting object against manual breakage	break protection		
		FQJ	preventive protecting object against manual unlocking	lock hatch cover		
	FR		protecting object related to material erosion	wear protecting object		Kind of method applied
		FRA	wear protecting object providing liquid material between objects	lubrication object	lubricating oil	
		FRB	wear protecting object providing a solid separating material between objects	wear pad		
	FS		protecting object related to the local environment	environment protecting object		Kind of method applied
		FSA	environment protecting object in the form of a solidified paste layer covering another object	plaster	cement, mortar	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3		paint		
		FSB	<i>environment protecting object</i> in the form of a hardened liquid film on the surface of another object			
		FSC	<i>environment protecting object</i> in the form of an applied or induced liquid making the object resistant to externally induced decay or destruction	impregnation	impregnation sheet	
		FSD	<i>environment protecting object</i> providing shelter against climatic effects	shelter	avalanche shed, house, shed, snow guard	
		FSE	<i>environment protecting object</i> in the form of vibration control	seismic vibration control device		
		FSF	<i>environment protection object</i> in the form of oxidation of metal	corrosion protection	cathodic protection, sacrificial anode	
		FSG	<i>environment protecting object</i> in the form of a seal on the surface of another object	protective seal		
		FSH	<i>environment protecting object</i> in the form of a capillary action breaking layer	material separating layer		
			<i>object for providing a controllable flow</i>	generating object		Kind of object flowing and kind of source
	GA		<i>generating object</i> of electric energy powered by mechanical energy	mechanical to electrical energy generating object		Kind of voltage and current form
		GAA	<i>mechanical to electrical energy generating object</i> of alternating current	AC generator	generator	
		GAB	<i>mechanical to electrical energy generating object</i> of direct current	DC generator	dynamo, generator	
	GB		<i>generating object</i> of electric energy powered by chemical reaction	chemical to electrical energy generating object		Kind of source method applied
		GBA	<i>chemical to electrical energy generating object</i> from a non-renewable source	electric battery	battery	
		GBB	<i>chemical to electrical energy generating object</i> continuously fed by fuel and oxidant	fuel cell		
	GC		<i>generating object</i> of electric energy from solar energy	solar to electrical energy generating object		Kind of method applied
		GCA	<i>solar to electrical energy generating object</i> utilizing wafer based semiconducting material	crystalline photovoltaic module	solar cell	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		GCB	solar to electrical energy generating object utilizing thin film material	thin film photovoltaic module	solar cell	
	GF		generating object of signals for carrier of information	signal generating object		Kind of source distribution method
		GFA	signal generating object by electromagnetic waves	electromagnetic wave transmitter	laser transmitter, radio-wave transmitter, television station	
		GFB	signal generating object by wires	signal generator		
	GL		generating object continuously of items	continuous transfer object		Direction and size of matters
		GLA	continuous transfer object on a belt	belt conveyor	conveyor belt	
		GLB	continuous transfer object on a chain	chain conveyor		
		GLC	continuous transfer object on rollers	roller conveyor		
		GLD	continuous transfer object propelled by a screw	screw conveyor		
		GLE	continuous transfer object consisting of a chain of steps	escalator		
		GLF	continuous transfer object consisting of chain of containers	paternoster		
		GLG	continuous transfer object on a vibrating surface	vibrating conveyor		
	GM		generating object discontinuously of items	discontinuous transfer object		Kind of method applied
		GMA	discontinuous transfer object horizontally	wagon		
		GMB	discontinuous transfer object vertically	elevator	hoist	
		GMC	discontinuous transfer object lifting and moving objects vertically and/or horizontally	crane		
		GMD	discontinuous transfer object placing objects together	palletizer	stacker	
		GME	discontinuous transfer object turning a conveyed flow	turntable		
		GMF	discontinuous transfer object moving objects in a linear flow by vibrating	vibrating feeder		
	GP		generating object of liquid	liquid flow generating object		Kind of method applied

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		GPA	<i>liquid flow generating object</i> by forcing trapped liquid to the discharge side	positive displacement pump	peristaltic pump, piston pump, rotary gear pump, screw pump, vacuum pump	
		GPB	<i>liquid flow generating object</i> by increasing the flow velocity through mechanical motion	liquid velocity pump	axial flow circulation pump, centrifugal pump, impeller, radial-flow circulation pump, vacuum pump	
		GPC	<i>liquid flow generating object</i> by transferring the kinetic energy of an input flow to an output flow	hydraulic ram pump		
		GPD	<i>liquid flow generating object</i> by converting potential energy to kinetic energy by gravity	lubricator	oiler	
	GQ		<i>generating object</i> of gas	<i>gaseous flow generating object</i>		Kind of flow generating method
		GQA	<i>gaseous flow generating object</i> by forcing trapped gas to the discharge side	gas compressor		
		GQB	<i>gaseous flow generating object</i> by increasing the flow velocity through mechanical motion	mechanical fan	air curtain, closed propeller fan, open propeller fan, propeller, squirrel cage fan, ventilator	
		GQC	<i>gaseous flow generating object</i> by transferring the kinetic energy of an input flow to an output flow	gas ejector		
	GR		<i>generating object</i> of thermal energy from solar energy	<i>solar to thermal energy generating object</i>		Kind of method applied
		GRA	<i>solar to thermal energy generating object</i> into a fluid thermal flow	solar panel	flatbed solar panel	
		GRB	<i>solar to thermal energy generating object</i> generating a fluid flow	solar tower		
			<i>object</i> for treating matter	<i>matter processing object</i>		Kind of method applied
	HJ		<i>matter processing object</i> by primary forming	<i>primary forming object</i>		Kind of initial material state
		HJA	<i>primary forming object</i> from liquid initial material state	casting tool	3D-printer	
		HJB	<i>primary forming object</i> from solid matter initial material state	press	3D-printer, chipboard press, sintering press	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
HK			<i>matter processing object for surface treatment</i>	surface treatment object		Kind of method applied
		HKA	<i>surface treatment object by preparation</i>	surface preparation machine	dishwasher, Hoover, shower, ultrasonic degreaser, vapour degreaser, window wiper	
		HKB	<i>surface treatment object by modification</i>	surface modification machine	burnishing machine, hammer peening machine, polisher, sand paper, wire brush	
		HKC	<i>surface treatment object by coating</i>	surface coating machine	air gun sprayer, anodizer, electrostatic coating machine, oil-coating machine	
HL			<i>matter processing object by joining or assembling</i>	assembling object		Kind of method applied
		HLA	<i>assembling object by physical assembly</i>	assembly robot		
		HLB	<i>assembling object by mechanical joining</i>	mechanical joining machine	crimping machine, friction (inertial) welder, pressure (cold) welder, ultrasonic welder	
		HLC	<i>assembling object by thermal joining</i>	thermal welding machine	electric arc welder, induction brazing machine, soldering machine	
HM		HLD	<i>assembling object by chemical joining</i>	chemical joining machine	gluing machine	
			<i>matter processing object by separating mixed substances by force</i>	force separating object		Kind of method applied
		HMA	<i>force separating object of particles by gravity</i>	settling tank		
		HMB	<i>force separating object of substances by rotation in a rotating chamber</i>	centrifuge		
HP		HMC	<i>force separating object of substances by rotation in a fixed chamber</i>	cyclone	hydrocyclone	
			<i>matter processing object by thermally separating mixed substances</i>	thermal separating object		Kind of thermal separating method applied
		HPA	<i>thermal separating object removing moisture</i>	dryer		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		HPB	<i>thermal separating object</i> generating the vaporized aggregation of a liquid	distillation column	distiller, evaporator	
	HQ		<i>matter processing object</i> by mechanically separating mixed substances	mechanical separating object		Kind of mechanical separating method applied
		HQA	<i>mechanical separating object</i> by removing substance from the surface of a liquid	skimmer		
		HQB	<i>mechanical separating object</i> of particles based on their size and/or shape	separation grate	bag filter, filter, rake, sack	
	HR		<i>matter processing object</i> by electromagnetically separating mixed substances	electric or magnetic separating object		Kind of method applied
		HRA	<i>electric or magnetic separating object</i> utilizing an electric field	electrostatic separator	electrostatic filter	
		HRB	<i>electric or magnetic separating object</i> utilizing a magnetic field	magnetic separator		
	HS		<i>matter processing object</i> by chemically separating mixed substances	chemical separating object		Kind of method applied
		HSA	<i>chemical separating object</i> utilising exchange of ions	ion exchanger	electrolyser	
		HSB	<i>chemical separating object</i> utilising absorption	absorber	absorption washer	
		HSC	<i>chemical separating object</i> utilising adsorption	adsorber		
	HU		<i>matter processing object</i> providing smaller forms of solid material	grinding and crushing object		Kind of sorting method applied
		HUA	<i>grinding and crushing object</i> for soft, medium-hard, fibrous and tough matter	cutter	waste grinder	
		HUB	<i>grinding and crushing object</i> for machining parts into precise sizes and shapes	mill	flour mill, water mill	
		HUC	<i>grinding and crushing object</i> of rock kind	crusher	stone crusher	
	HV		<i>matter processing object</i> providing larger forms of substances	agglomerating object		Kind of assembly method applied
		HVA	<i>agglomerating object</i> compressing or moulding a material into the shape of a pellet	pelletizer		
		HVB	<i>agglomerating object</i> enabling (a process wherein) colloids to come out of suspension in the form of floc or flake	floculator	floculation apparatus	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
HW	HWA		<i>matter processing object</i> mixing different substances	mixing object		Kind of method applied
			<i>mixing object</i> that provides a new property substance from different substances	mixer	kneader	
			<i>mixing object</i> providing humid gaseous substance	humidifier		
	HXB		<i>matter processing object</i> providing new material by chemical or biological reaction	reacting object		Kind of method applied
HX	HXA		<i>reacting object</i> enabling and controlling a chemical reaction	chemical reactor	gasifier	
	HXB		<i>reacting object</i> enabling and controlling a biological reaction	fermenter		
KE	KEA		<i>object</i> for treating input signals and providing an appropriate output	information processing object		Kind of signal
			<i>information processing object</i> for processing electric signals	electric signal processing object		Kind of functionality
			<i>electric signal processing object</i> with human intervention	computer	PC, personal computer, tablet computer	
	KEB		<i>electric signal processing object</i> without human intervention for control of devices	control unit	central processing unit (CPU), distance protection and control unit, programmable logic controller (PLC), remote terminal unit (RTU), remote telecontrol unit (RTU), synchronizing device, synchronizing relay	
KF	KEC		<i>electric signal processing object</i> without human intervention providing input/output to devices	communication device	Ethernet card, Firewire card, i/o-device, i/o module, USB card	
			<i>electric signal processing object</i> without human intervention forwarding signals between data networks	router	data network gateway, firewall, security device	
			<i>electric signal processing object</i> without human intervention saving the information provided by the input on a storage device	card writer	compact disk writer, optical disk writer, tape recorder	
	KFA		<i>information processing object</i> for relaying electric signals	electric signal relaying object		Kind of functionality
KFB	KFB		<i>electric signal relaying object</i> by forwarding without delay	relay	coupler	
			<i>electric signal relaying object</i> by forwarding with delay	time relay		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3	<i>electric signal relaying object</i> by repeating the input signal as an improved output signal	repeater		
		KFC		electric network bridge		
		KFD		electric network switch		
		KFE	<i>electric signal relaying object</i> by forwarding the input to specific devices within a data network			
	KG		<i>information processing object</i> of optical signals	optical signalling object		Kind of functionality
		KGA	<i>optical signalling object</i> actively by forwarding the input to specific devices within an optical network	optical network switch		
		KGB	<i>optical signalling object</i> forwarding data packages between computer networks	optical router		
		KGC	<i>optical signalling object</i> by repeating the input signal as an improved output signal	optical repeater		
	KH		<i>information processing object</i> of fluid signals	fluid signalling object		Kind of purpose
		KHA	<i>fluid signalling object</i> for feedback control	fluid controller		
		KHB	<i>fluid signalling object</i> relaying signals	pilot valve		
	KJ		<i>information processing object</i> of mechanical signals	mechanical signalling object		Kind of method
		KJA	<i>mechanical signalling object</i> adjusting an air or fluid flow	mechanical regulator		
		KJB	<i>mechanical signalling object</i> for locking/unlocking of a locking mechanism	locking cylinder		
		KJC	<i>mechanical signalling object</i> providing a binary state of a mechanical device	key coded device		
	KZ		<i>information processing object</i> of signals of multiple kinds	multiple kind signalling object		Kind of method
		KZA	<i>multiple kind signalling object</i> forwarding the input to specific devices	multiple kind switch		
			<i>object</i> for providing mechanical movement or force	driving object		Kind of driving force
	MA		<i>driving object</i> in the form of rotational torque, powered by electromagnetic force	electromagnetic rotational driving object		Kind of movement

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		MAA	electromagnetic rotational driving object providing continuous rotation	electric motor	AC motor, asynchronous motor, DC motor, induction motor, PM motor, servo-motor, synchronous motor	
		MAB	electromagnetic rotational driving object providing discrete rotational steps	stepper motor		
MB			driving object in the form of linear force, powered by electromagnetic force	electromagnetic linear driving object		Kind of method
		MBA	electromagnetic linear driving object providing a continuous movement	linear motor		
MC		MBB	electromagnetic linear driving object providing discrete steps	electromagnet	actuator, solenoid	
			driving object powered by magnetic force	magnetic force driving object		Kind of method
MD		MCA	magnetic force driving object by permanent magnet	permanent magnet		
			driving object powered by piezoelectric force	piezoelectric driving object		Kind of method
ML		MDA	piezoelectric driving object by piezoelectric crystal	piezoelectric motor	piezoelectric actuator	
			driving object powered by mechanical energy	mechanical energy driving object		Kind of mechanical source
		MLA	mechanical energy driving object releasing gravitational energy	gravity energy drive	roller coaster	
		MLB	mechanical energy driving object releasing elastic energy	elastic energy drive	spring actuator device	
		MLC	mechanical energy driving object in the form of kinetic energy in blowing air	wind turbine		
		MLD	mechanical energy driving object in the form of kinetic energy in streaming water	water turbine		
		MLE	mechanical energy driving object in the form of kinetic energy and reaction force in streaming and/or expanding gases	gas turbine		
MM			driving object powered by fluid displacement or pressure	fluid powered driving object		Kind of fluid source
		MMA	fluid powered driving object providing movement corresponding to a liquid volume	hydraulic cylinder		
		MMB	fluid powered driving object providing movement to end positions depending on the gaseous pressure	pneumatic cylinder		
		MMC	fluid powered driving object providing rotation by a flowing liquid	hydraulic motor		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
MS	MMD		<i>fluid powered driving object</i> providing rotation by a pressurized gas	pneumatic motor		
			<i>driving object</i> powered by combustion of fuels	combustion engine		Kind of engine
		MSA	<i>combustion engine</i> in cylinders with pistons powered by spark ignited combustion	Otto cycle engine		
		MSB	<i>combustion engine</i> in cylinders with pistons powered by compressed ignited combustion	Diesel cycle engine		
		MSC	<i>combustion engine</i> in circular compartment with eccentric rotary piston powered by spark ignited combustion	Wankel engine		
MT	MTA		<i>driving object</i> powered by an external heat source	heat engine		Kind of engine
			<i>heat engine</i> utilizing expanding steam acting on one piston	steam engine		
		MTB	<i>heat engine</i> utilizing two pistons within one heated and one cooled cylinder or cylinder part	Stirling engine		
NA			<i>object</i> for enclosing partly or fully another object	covering object		Kind of method
			<i>covering object</i> by filling an opening	infilling object		Kind of purpose by the filling
		NAA	<i>infilling object</i> permitting light entry	pane		
		NAB	<i>infilling object</i> preventing entry of light and solid objects	panel		
		NAC	<i>infilling object</i> permitting fluid entry	grating		
NB	NAD		<i>infilling object</i> preventing fluid entry	sealing joint	gasket, gland, grout	
			<i>covering object</i> by closing an opening	closure object		Kind of object to close
		NBA	<i>closure object</i> in a door	door leaf		
		NBB	<i>closure object</i> in a large door	leaf of large door		
		NBC	<i>closure object</i> in an enclosure	cabinet door	cubicle door, cupboard door, inspection hatch, fuel door	
		NBD	<i>closure object</i> in a gate	gate leaf		
		NBE	<i>closure object</i> in a hatch	hatch cover	faceplate, housing cover	
			<i>covering object</i> by finishing structures	finishing object		Kind of object to protect
		NC				

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		NCA	<i>finishing object of a pavement</i>	paving		
		NCB	<i>finishing object of a wall</i>	wall covering		
		NCC	<i>finishing object of a floor</i>	flooring		
		NCD	<i>finishing object of a ceiling</i>	ceiling finish		
		NCE	<i>finishing object of a roof</i>	roofing		
		NCF	<i>finishing object of an opening</i>	window sill	window board	
		NCG	<i>finishing object of a vegetation area</i>	plant mat	grass turf	
		NCH	<i>finishing object by forming the outer shape of an object</i>	surface forming object	aircraft fairing, aircraft skin, belly fairing, car body panel, cockpit fairing, motorcycle fairing, unstressed hull plate	
	ND		<i>covering object by terminating another object</i>	terminating object		Kind of object to terminate
		NDA	<i>terminating object delimiting an edge of pavement or vegetation area</i>	curb	lawn edge, plant bed edge	
		NDB	<i>terminating object delimiting an edge of a wall</i>	crown	flaunching, wall top	
		NDC	<i>terminating object delimiting an edge of a floor</i>	raised floor edge		
		NDD	<i>terminating object delimiting an edge of a ceiling</i>	ceiling edge		
		NDE	<i>terminating object delimiting an edge of a roof</i>	fascia	bargeboard	
	NE		<i>covering object by hiding joints and transitions</i>	hiding object		Kind of method and purpose
		NEA	<i>hiding object between a wall and a ceiling</i>	ceiling lining		
		NEB	<i>hiding object between a wall and a floor</i>	skirting board	base shoe	
		NEC	<i>hiding object between two walls</i>	wall corner lining		
		NED	<i>hiding object on a roof</i>	flashing	eaves lead, ridge flashing, roof flashing	
		NEE	<i>hiding object around an opening</i>	reveal liner	architrave, bushing	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
P			object for providing perceptible information	presenting object		Kind of presentation form and kind of information to be presented
	PF		<i>presenting object</i> in visible form of discrete states	visible state indicator		Kind of method and purpose
		PFA	<i>visible state indicator</i> by light	signal lamp	traffic light	
		PFB	<i>visible state indicator</i> by mechanical positions	semaphore		
	PG		<i>presenting object</i> in a visible form of a single scalar variable	scalar display		Quantity to be presented
		PGA	scalar display representing electric voltage	voltmeter		
		PGB	scalar display representing resistivity or conductivity	resistivity indicator		
		PGC	scalar display representing electric current	ampere meter		
		PGD	scalar display representing density	density indicator		
		PGE	scalar display representing field	field indicator		
		PGF	scalar display representing flow	flow meter		
		PGG	scalar display representing spatial dimension and/or position	dimension indicator	angle indicator, position indicator	
		PGH	scalar display representing energy	energy meter	var-hour meter, watt-hour meter	
		PGJ	scalar display representing electric power	wattmeter	varmeter	
		PGK	scalar display representing time	clock		
		PGL	scalar display representing level	level indicator	sight glass	
		PGM	scalar display representing humidity	humidity indicator	hygrometer	
		PGP	scalar display representing pressure	pressure indicator	barometer, manometer	
		PGQ	scalar display representing substance concentration	concentration indicator		
		PGR	scalar display representing radiation	electromagnetic wave indicator		
		PGS	scalar display representing time-rate	frequency meter		
		PGT	scalar display representing temperature	temperature indicator		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		PGV	scalar display representing the offset between active power and reactive power	cos-phi meter		
		PGW	scalar display representing weight, force or torque	force indicator		
		PGX	scalar display representing sound	audio spectrometer		
		PGZ	scalar display representing number of incidents	quantity meter		
PH			presenting object in visible form by pictures, symbols, text or physical characteristics	graphical display		Kind of presentation means
		PHA	graphical display dynamically on its surface	display	blackboard, whiteboard	
		PHB	graphical display dynamically on another surface	projector		
		PHC	graphical display on a printed media	printer		
		PHD	graphical display statically on its surface	sign	traffic sign	
		PHE	graphical display statically on the surface of another object	marking		
		PHF	graphical display statically by its physical characteristics	marking post	reference point	
PJ			presenting object in audible form	acoustic device		Kind of method
		PJA	acoustic device provided by the movement of a membrane	loudspeaker		
		PJB	acoustic device provided by the stream of air	horn		
		PJC	acoustic device provided by mechanical excitation of the object	bell		
PK			presenting object in tactile form	tactile device		Kind of method
		PKA	tactile device of discrete states by vibration	vibrator		
		PKB	tactile device of static information	braille text sign	road grooves	
		PKC	tactile device for suprajacent obstacles	free height warning		
PL			presenting object in an ornamental form	ornamental object		Kind of method applied
		PLA	ornamental object as a separation between two areas	cornice		
		PLB	ornamental object as a spatial representation of something	figure		
		PLC	ornamental object as protruding figures and/or decorative elements on a wall	frieze	pilaster, stucco	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
Q	PL	PLD	ornamental object representing, illustrating or reproducing something visibly on a surface	picture		
		PLE	ornamental object by a fabric covering part of another object	carpet		
	PZ		presenting object in multiple forms	multiple form presenting object		Kind of method applied
		PZA	multiple form presenting object for discrete states	audio-visual alarm		
		PZB	multiple form presenting object for multiple information	television set		
			object for controlling access or flow	controlling object		Kind of object flowing and kind of method
QA			controlling object of electric current in an electric circuit	electric controlling object		Kind of switching method
		QAA	electric controlling object mechanically under normal service conditions only	contactor	motor starter	
		QAB	electric controlling object mechanically under normal and abnormal service conditions	circuit breaker	motor starter	
		QAC	electric controlling object electronically	electronic power switch	defibrillator, motor starter, solid state power transistor, thyristor, tube power transistor	
QB			controlling object by separating electric circuits	electric separating object		Kind of purpose
		QBA	electric separating object by mechanically isolating the downstream circuit from the upstream circuit only	fuseless disconnecter	disconnecter, load-switch disconnecter	
		QBB	electric separating object by mechanically isolating the downstream circuit from the upstream circuit and with a built-in fuse	fused disconnecter	fuse-switch disconnecter, switch-fuse disconnecter	
QC			controlling object by earthing electric circuits	electric earthing object		Kind of purpose
		QCA	electric earthing object connecting electric circuits to earth	earthing switch		
QM			controlling object of fluids on/off in sealed enclosures	sealed fluid switching object		Kind of fluids
		QMA	sealed fluid switching object of a liquid flow	liquid shutoff valve	draw-off tap, faucet, plug	
		QMB	sealed fluid switching object of a gas flow	gas shutoff valve	on-off damper, plug	
QN			controlling object for varying the flow of fluids in sealed enclosures	sealed fluid varying object		Kind of fluids

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		QNA	sealed fluid varying object of a liquid flow	liquid control valve		
		QNB	sealed fluid varying object of a gas flow	gas control valve	control damper	
	QP		controlling object of fluids in an open environment	open flow controlling object		Kind of fluids
		QPA	open flow controlling object for varying or switching on/off	lock gate	dam plate, liquid gate	
		QPB	open flow controlling object for directing a flow by a fixed means	vortex generator	nose strake, strake, ventral strake, wing strake	
		QPC	open flow controlling object for directing a flow by a variable means	rudder		
	QQ		controlling object to a space	space access object		Kind of purpose of the space access object
		QQA	space access object for light entry only	window		
		QQB	space access object for entry of light and persons	window unit		
		QQC	space access object for upright passage by persons	door		
		QQD	space access object of restricted size for passage of persons and goods	hatch	escape hatch	
		QQE	space access object of extended size for transfer of objects	large door		
		QQF	space access object partially	gate	openable bar	
		QQG	space access object by blocking entrance to a track	rail scotch block		
	QR		controlling object of solid substance	solid substance flow varying object		Kind of method
		QRA	solid substance flow varying object with rotating chambers	rotary air lock valve	dosing machine	
		QRB	solid substance flow varying object with an iris opening	iris valve	dosing machine	
		QRC	solid substance flow varying object with a hinged flap or disc	flap gate valve	dosing machine	
	QS		controlling object for mechanical movement	mechanical movement controlling object		Kind of method
		QSA	mechanical movement controlling object by blocking	lock	latch	
		QSB	mechanical movement controlling object by switching between different tracks	track switch	railroad switch	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
Q	QZ		<i>controlling object</i> in electrical circuits, utilising different measures	multiple measure controlling object		Kind of purpose
		QZA	<i>multiple measure controlling object</i> for earthing or separating electrical circuit	earthing and disconnecting switch		
	R		<i>object</i> for restricting or stabilising	restricting object		Kind of object flowing and kind of constraint
		RA	<i>restricting object</i> by restricting a flow of electric energy	electricity restricting object		Kind of method
R	RA	RAA	<i>electricity restricting object</i> by blocking current flow in one direction	diode		
		RAB	<i>electricity restricting object</i> by providing an inductance in a circuit	reactor	limiter, series reactor	
		RAC	<i>electricity restricting object</i> by providing a resistance in a circuit	resistor		
		RB	<i>restricting object</i> by stabilising a flow of electric energy	electricity stabilising object		Kind of method
	RB	RBA	<i>electricity stabilising object</i> ensuring a continuous power supply	uninterruptible power supply	UPS	
		RBB	<i>electricity stabilising object</i> suppressing a defined frequency range within the flow	power filter		
		RBC	<i>electricity stabilising object</i> providing reactive power	phase compensator	power factor correction system, power factor correction unit, voltage compensator	
		RBD	<i>electricity stabilising object</i> suppressing or amplifying multiple frequency ranges within the flow	power equaliser		
	RF		<i>restricting object</i> by stabilising a signal	signal stabilising object		Kind of method
		RFA	<i>signal stabilising object</i> suppressing or amplifying multiple frequency ranges of the signal	signal equaliser		
RL	RFB		<i>signal stabilising object</i> suppressing a defined frequency range of the signal	signal filter	ferrite	
			<i>restricting object</i> by restricting movements	movement restricting object		Purpose of the mechanical limiting object
	RLA		<i>movement restricting object</i> by limiting movement of an object	security chain	door chain, rail anchor	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		RLB	<i>movement restricting object by setting and damping movements of an object</i>	shock absorber	rubber bushing	
		RLC	<i>movement restricting object by reducing the speed of or stopping another object</i>	brake		
		RLD	<i>movement restricting object by preventing high speed of another object</i>	speed bump		
	RM		<i>restricting object by restricting a return flow of matter</i>	return flow restricting object		Kind of possible return flow
		RMA	<i>return flow restricting object of liquids</i>	non-return valve		
		RMB	<i>return flow restricting object of gas</i>	check damper		
		RMC	<i>return flow restricting object of solid substances</i>	flap		
		RMD	<i>return flow restricting object of odour</i>	stench trap		
	RN		<i>restricting object by restricting a guided flow of matter</i>	flow restrictor		Kind of flow and method
		RNA	<i>flow restrictor of liquids by an adjustable means</i>	regulating valve	draw-off tap, shower, shower head	
		RNB	<i>flow restrictor of gas by an adjustable means</i>	regulating damper	adjustable nozzle, air intake, air outlet, ventilation inlet, ventilation outlet	
		RNC	<i>flow restrictor of solid substances by an adjustable means</i>	solids regulating valve		
		RND	<i>flow restrictor by a fixed means</i>	diffuser	fixed nozzle, orifice plate, shower, shower head	
	RQ		<i>restricting object of the local environment</i>	local climate stabilising object		Kind of effect and method applied
		RQA	<i>local climate stabilising object by restricting a thermal or sound transmission</i>	insulation	brick lining	
		RQB	<i>local climate stabilising object by stabilising a flow of liquids, moisture, wind or material</i>	membrane	climate membrane	
		RQC	<i>local climate stabilising object by stabilising the propagation of sound</i>	noise barrier	noise protection, sound baffle	
		RQD	<i>local climate stabilising object by restricting wind, precipitation or radiation</i>	screen		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		RQE	<i>local climate stabilising object</i> by restricting transmission of light using textiles	curtain		
		RQF	<i>local climate stabilising object</i> by restricting transmission of light using narrow adjustable louvers	louvered blind		
		RQG	<i>local climate stabilising object</i> by restricting transmission of light using an external panel	shutter		
		RQH	<i>local climate stabilising object</i> preventing weed growth	weed control fabric		
		RQJ	<i>local climate stabilising object</i> by restricting vision and sound	screen wall		
	RU		<i>restricting object</i> by restricting access to an area	access restricting object		Kind of method applied
		RUA	<i>access restricting object</i> by a horizontal elongated barrier with a vertical extent	fence		
		RUB	<i>access restriction object</i> by a movable horizontal barrier	movable barrier	bar	
		RUC	<i>access restricting object</i> by a rotational barrier	turnstile	entrance management gate machine, one-way door, gate machine, ticket gate	
		RUD	<i>access restricting object</i> by a barrier with limited horizontal and vertical extent	bollard		
		RUE	<i>access restricting object</i> by shaping a path	rodent barrier	rat stop device, stock guard	
		RUF	<i>access restricting object</i> by a mesh	bird mesh		
			<i>object</i> for detecting a human action and providing an appropriate response	human interaction object		Kind of actuating operation
	SF		<i>human interaction object</i> by facial interaction	face interaction device		Kind of method
		SFA	<i>face interaction device</i> by sensing of facial activity	eye focus reader	eye actuator for positioning operations	
		SFB	<i>face interaction device</i> by face recognition	face recognition device		
	SG		<i>human interaction object</i> to a hand action	hand interaction device		Kind of method
		SGA	<i>hand interaction device</i> by turning	turn handle	potentiometer, rotary switch	
		SGB	<i>hand interaction device</i> by gripping	grip handle	2- or 3-position enabling device, two-hand control	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		SGC	<i>hand interaction device</i> by pushing	push handle	emergency push button, two-hand control	
		SGD	<i>hand interaction device</i> by lever	lever handle		
		SGE	<i>hand interaction device</i> by pulling	pull handle	emergency pull wire, mechanical lever	
		SGF	<i>hand interaction device</i> to turn a matching locking cylinder or locking mechanism	key	key switch	
SH			<i>human interaction object</i> to a foot position	foot interaction device		Kind of method
		SHA	<i>foot interaction device</i> by pressing by the foot	pedal switch	2- or 3-position enabling device	
	SJ		<i>human interaction object</i> by finger operation	finger interaction device		Kind of method
		SJA	<i>finger interaction device</i> by lever operation	flip switch	2-position switch	
		SJB	<i>finger interaction device</i> by pressing	pushbutton	hold-to-run device, keyboard, pushbutton switch	
		SJC	<i>finger interaction device</i> by a touching	touch actuator	2-position switch, touchpad	
		SJD	<i>finger interaction device</i> by advancing/reversing a wheel	turning wheel		
SK			<i>manual interaction object</i> by its movement or positioning	movement interaction device		Kind of method
		SKA	<i>movement interaction device</i> by restricted positioning and selecting operations	joystick	roller ball	
		SKB	<i>movement interaction device</i> by unrestricted positioning and selecting operations	mouse	light pen	
SZ			<i>human interaction object</i> with multiple kinds of interacting means	multi-interaction device		Kind of means applied
		SZA	<i>multi-interaction device</i> involving manual means	operating panel	gamepad, game controller, joypad	
T			<i>object</i> for transforming	transforming object		Kind of object changed and kind of transformation
	TA		<i>transforming object</i> of electric energy while retaining AC or DC	electric energy transforming object		Kind of characteristics transformed
		TAA	<i>electric energy transforming object</i> from AC to AC without change of the frequency	transformer	isolating transformer	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		TAB	electric energy transforming object from DC to DC	DC/DC converter		
		TAC	electric energy transforming object from AC to AC while changing the frequency	frequency converter	power drive	
		TAD	electric energy transforming object from AC to AC while shifting the angle between voltages and currents	phase shifter		
TB			transforming object of electric energy changing between AC and DC	electric energy converting object		Kind of transformation
		TBA	electric energy converting object converting from AC to DC	rectifier	power supply	
		TBB	electric energy converting object converting from DC to AC	inverter	power supply	
TBC			electric energy converting object converting from AC to DC or DC to AC	bidirectional converter		
			transforming object of electric energy from AC and DC to AC or DC	universal power supply		Kind of supply output
		TCA	universal power supply providing AC	universal AC power supply	power supply	
TCB			universal power supply providing DC	universal DC power supply	power supply	
			transforming object of signal	signal converting object		Kind of conversion
		TFA	signal converting object maintaining the signal form	amplifier		
TFB			signal converting object between a wired and wireless form	signal antenna	aerial, antenna, inductive signal antenna, IR diode, IR sender, oscillator, RF signal antenna	
			signal converting object between wired forms	signal converter	optocoupler, transducer	
		TFD	signal converting object between electrical and optical form	optical receiver/transmitter		
TFE			signal converting object between acoustic waves and electrical signals	telephone	cell phone, mobile phone, phone	
			transforming object of mechanical energy	mechanical energy transforming object		Kind of transformation
		TLA	mechanical energy transforming object modifying velocity	gear	automatic gear, control coupling, indexing gear, speed converter	
TLB			mechanical energy transforming object modifying torque	torque converter		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
TM	TLC	TMA	<i>mechanical energy transforming object</i> modifying force	lever		
			<i>transforming object</i> of matter by mass reduction	mass reduction object		Kind of process
			<i>mass reduction object</i> by a mechanical process	drilling machine	boring machine, grinder, punching machine, saw, turning machine	
			<i>mass reduction object</i> by a thermal process	thermal cutter	electron discharge sawing machine, gas cutting machine, plasma arc cutting machine	
			<i>mass reduction object</i> by a chemical process	etching machine	immersion chemical mill, spray chemical mill	
	TP	TPA	<i>transforming object</i> of matter by shape reforming	matter reshaping object		Kind of process
			<i>matter reshaping object</i> by forging	forging machine	cold forging machine, hot forging machine	
			<i>matter reshaping object</i> by extruding	extruder		
			<i>matter reshaping object</i> by drawing	wire drawing machine	tube drawing machine	
			<i>matter reshaping object</i> by rolling or spinning	rolling machine	knurling machine, sheet rolling machine, shear spinning machine, thread forming machine	
TR	TPE	TPF	<i>matter reshaping object</i> by bending	bending machine	curling machine, seaming machine	
			<i>matter reshaping object</i> by high energy rate forming	electromagnetic forming machine	electrohydraulic forming machine, explosive forming machine	
			<i>transforming object</i> of radiation by photosynthesis	organic plant		Kind of woodiness
			<i>organic plant</i> with a single woody stem	tree		
			<i>organic plant</i> with several woody stems	shrub	bush	
	TRB	TRC	<i>organic plant</i> with long shoots with climbing organs	climber		
			<i>organic plant</i> that is not woody or is insignificantly woody	herb	flower, grass, vegetable plant	
			<i>object</i> for localising other objects	holding object		Kind of positioning
U						

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
UA	UA		<i>holding object</i> by fixing at a defined position	positioning object		Kind of object to be fixed
		UAA	<i>positioning object</i> for conductor	insulator		
		UAB	<i>positioning object</i> for cable	cable gland	cable access, cable entry	
		UAC	<i>positioning object</i> for light source	light fixture	luminaire	
		UAD	<i>positioning object</i> for tread	stair stringer	flange	
		UAE	<i>positioning object</i> for cover	batten		
		UAF	<i>positioning object</i> for plant	stake	espalier, lattice	
		UAG	<i>positioning object</i> for rail spacing	rail gauge	track gauge	
		UAH	<i>positioning object</i> for tool or work piece	clamp	chuck, dog, jaw, lathe chuck	
		UAJ	<i>positioning object</i> for vehicle	vehicle stand	bicycle stand	
UB	UB		<i>holding object</i> by carrying	carrying object		Kind of method
		UBA	<i>carrying object</i> between discrete positions	cable tray	cable duct, cable ladder, cable rack, conduit, duct channel, equipment support structure, wire duct	
		UBB	<i>carrying object</i> at a discrete position by vertical pulling	hanger	hanging bracket, strap, string	
		UBC	<i>carrying object</i> at a discrete position by steps	tread	rung, step	
		UBD	<i>carrying object</i> at a discrete position by vertical pushing	mast	electricity pylon, pole, post, supporting bracket, transmission tower	
		UBE	<i>carrying object</i> at a discrete plane by pushing	table	catwalk, operating table, platform	
UC	UC		<i>carrying object</i> between discrete positions at a defined level	portal		
			<i>holding object</i> by enclosing	enclosing object		Kind of method
		UCA	<i>enclosing object</i> for devices	cubicle	cabinet, electrical enclosure, electric panel, service chamber, server rack, hose reel cubicle, safety cabinet, sensor housing, sub-rack	
		UCB	<i>enclosing object</i> for plant roots	plant soil		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		UCC	enclosing object for spot ventilation	cooker hood	safety cabinet	
	UL		holding object by forming a structural support	structural supporting object		Kind of form and function
		ULA	structural supporting object in form of an aggregate material layer	base course	aggregate base, base layer, binding layer	
		ULB	structural supporting object in form of a projection supporting an overlying structure	console	corbel	
		ULC	structural supporting object in a curved or straight linear form transferring compressing forces to surrounding media	pile	building foundation, bridge pylon, plinth	
		ULD	structural supporting object in a curved or straight linear form transferring compressing forces to other structural objects	column	baluster, compression member, pillar, foundation column, strut	
		ULE	structural supporting object in a straight linear form withstanding bending moments	beam	foundation beam	
		ULF	structural supporting object in a straight linear form withstanding tensile forces	tension brace	earth anchor, ground anchor, rope, tie	
		ULG	structural supporting object in form of a block	block	brick, foundation block, machine foundation, stone	
		ULH	structural supporting object in a curved linear form withstanding bending moments	arch		
		ULJ	structural supporting object in a plane or curved surface form withstanding compression forces and bending moments	abutment		
		ULK	structural supporting object in laying a plane surface form withstanding bending moments	slab plate	base grade, bridge deck, concrete deck, deck, floor slab, foundation slab, hole deck, slab	
		ULL	structural supporting object in a standing plane or curved surface form withstanding bending moments	retaining wall plate	cantilever wall, gravity wall, sheet piling	
		ULM	structural supporting object in a plane or curved surface form withstanding compression forces	wall plate	concrete element, facing wall, foundation wall, load-bearing wall, wall	
		ULN	structural supporting object a plane or curved surface form withstanding tensile forces	shell	bilge plate, hull plate, ship hull plate, stressed skin panel	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
ULP	ULQ	ULR	structural supporting object in a curved surface form withstanding bending moments	continuous arch	dome, lamina, pipe tunnel, vault	
			structural supporting object a flat surface form distributing loads in joints	bearing plate	plate, pressure distribution, support wedge	
			structural supporting object in a curved linear form withstanding tensile forces	catenary		
			holding object by reinforcement	reinforcing object		Kind of method
			reinforcing object as an embedded rod	reinforcing rod	reinforcement bar, rock bolt	
			reinforcing object as an embedded mesh or fabric	reinforcing mesh	rebar mesh	
			reinforcing object as a mass layer	reinforcing mass layer	pavement reinforcement	
			reinforcing object as an embedded matter	reinforcing matter	concrete injection, lime column	
			reinforcing object as a lock latch	security strike plate		
			reinforcing object as an intermediate filling	splice	splice plate	
UM	UMA	UMB	reinforcing object by vertical draining	soil vertical drain		
			reinforcing object by concrete spurring	concrete spurring		
			reinforcing object by concrete lining	concrete lining		
			reinforcing object by stiffener	stiffener	buttress, counterfort, flying buttress, rib	
			reinforcing object by diagonal bonding	diagonal bonding		
			reinforcing object as cables	stabilizing cable		
			reinforcing object as a horizontal rail	horizontal rail		
			reinforcing object which by its counterweight stabilizes soil	earth pressure embankment		
			holding object by framing other objects	framing object		Kind of method
			framing object with a fixed frame	fixed frame	door frame, window frame	
UN	UNB	UNC	framing object with the lowest part of gate abutting	threshold		
			framing object with a moveable frame	movable frame	windowpane frame	
			framing object dividing a sash or door	glazing bar frame	glazing bar	

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
UP			<i>holding object by non-static jointing</i>	jointing object		Kind of method
		UPA	<i>jointing object by bearing</i>	bearing	ball bearing, roller bearing, sliding object	
		UPB	<i>jointing object by mechanical joint</i>	hinge	elastic fastening, expansion joint, movement joint	
		UPC	<i>jointing object by chemical bonding</i>	chemical joint	cement, structural joint	
UQ			<i>holding object by static jointing</i>	fastening object		Kind of method
		UQA	<i>fastening object by rigid and permanent mechanical means</i>	anchor plate	mounting bracket, nail, rivet	
		UQB	<i>fastening object by rigid and reversible mechanically means</i>	bolt	mounting bracket, nut, rail fastener, screw	
		UQC	<i>fastening object by chemical bonding</i>	chemical bond	weld seam	
UT			<i>holding object by levelling</i>	levelling object		Kind of method
		UTA	<i>levelling object providing a defined profiled surface of plane by adding material</i>	filling		
		UTB	<i>levelling object providing a defined profiled surface of plane by removing material</i>	excavation	patterned ground	
UU			<i>holding object by existing ground</i>	existing ground		Kind of material
		UUA	<i>existing ground of rock</i>	rock		
		UUB	<i>existing ground of friction soil</i>	friction soil		
		UUC	<i>existing ground of cohesive soil</i>	cohesive soil		
		UUD	<i>existing ground of organic soil</i>	organic soil		
		UUE	<i>existing ground of filled material</i>	filled material		
W			<i>object for leading from one place to another</i>	guiding object		Kind of flow and kind of technology
			<i>guiding object of high voltage electric energy</i>	high voltage electric energy guiding object		Kind of method
		WBA	<i>high voltage electric energy guiding object by a busbar</i>	high voltage busbar		
		WBB	<i>high voltage electric energy guiding object by a cable</i>	high voltage cable		
		WBC	<i>high voltage electric energy guiding object by a wire</i>	high voltage wire		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
WD	WBD		high voltage electric energy guiding object through an enclosure, wall or barrier	high voltage bushing		
			guiding object of low voltage electric energy	low voltage electric energy guiding object		Kind of method
		WDA	low voltage electric energy guiding object by a busbar	low voltage busbar		
		WDB	low voltage electric energy guiding object by a cable	low voltage cable		
		WDC	low voltage electric energy guiding object by a wire	low voltage wire		
		WDD	low voltage electric energy guiding object through an enclosure, wall or barrier	low voltage bushing		
WE	WED		guiding object of a reference potential	reference potential guiding object		Kind of method
		WEA	reference potential guiding object of earth by a busbar	earthing rail		
		WEB	reference potential guiding object of earth by a cable	earthing cable		
		WEC	reference potential guiding object by a busbar	equipotential bonding rail		
			reference potential guiding object by a cable	equipotential bonding cable		
			guiding object for electric signals	electric signal guiding object		Kind of purpose
WG	WGA		electric signal guiding object for controlling and measuring	control cable		
			electric signal guiding object for data transmission	data cable	data bus	
		WGC	electric signal guiding object through an enclosure or wall	electric signal bushing		
			guiding object for light	light guiding object		Kind of flow
		WHA	light guiding object for signal transmission	fibre optical cable		
		WHB	light guiding object for light transmission	optical light fibre	optical light guide, optical wave guide	
WH	WHC		light guiding object for defined light refraction	lens		
		WHD	light guiding object for defined light reflection	mirror	light reflector	
			guiding object for sound	sound guiding object		Kind of method
		WJA	sound guiding object by reflection	sound reflector		
			guiding object of solid matter in open enclosure	solid matter guiding object		Kind of method
		WL				

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		WLA	<i>solid matter guiding object by rolling</i>	roller table		
		WLB	<i>solid matter guiding object by sliding</i>	chute	inclined plane, tube conveyer	
	WM		<i>guiding object of fluid flow in open enclosure</i>	open enclosure guiding object		Kind of method
		WMA	<i>open enclosure guiding object in a layer</i>	drainage layer	infiltration layer, aeration layer	
		WMB	<i>open enclosure guiding object for liquid in open conduit</i>	gutter	eaves gutter, eaves trough, rain gutter	
		WMC	<i>open enclosure guiding object for liquid with an open surface</i>	drain liquid flashing		
		WMD	<i>open enclosure guiding object for liquid by projection</i>	drip nose		
		WME	<i>open enclosure guiding object for liquid by liquid-draining profile</i>	gutter drip		
		WMF	<i>open enclosure guiding object by perforated pipe</i>	drainpipe	infiltration pipe, aeration pipe	
		WMG	<i>open enclosure guiding object in a chamber</i>	infiltration chamber	aeration well, radon well	
	WP		<i>guiding object of matter flow in closed enclosure</i>	closed enclosure guiding object		Kind of form applied
		WPA	<i>closed enclosure guiding object in a circular rigid form</i>	pipe		
		WPB	<i>closed enclosure guiding object in a non-circular rigid form</i>	duct	chimney	
		WPC	<i>closed enclosure guiding object in a flexible form</i>	hose		
	WQ		<i>guiding object of mechanical energy</i>	mechanical energy guiding object		Kind of method
		WQA	<i>mechanical energy guiding object by a shaft</i>	drive axle	axle	
		WQB	<i>mechanical energy guiding object by a belt</i>	drive belt	moving line, v-belt	
		WQC	<i>mechanical energy guiding object by a chain</i>	drive chain	chain	
		WQD	<i>mechanical energy guiding object by a linkage</i>	drive link		
		WQE	<i>mechanical energy guiding object by a wheel</i>	wheel	cogwheel, gearwheel	
		WQF	<i>mechanical energy guiding object by a toothed bar</i>	toothed bar		
		WQG	<i>mechanical energy guiding object by a fluid link</i>	hydraulic hose	hydraulic pipe, pneumatic hose, pneumatic pipe	
	WR		<i>guiding object for track bound objects</i>	rail object		Kind of method

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		WRA	<i>rail object providing a directed path</i>	track	rail track	
		WRB	<i>rail object providing a crossing</i>	track crossing		
WV			<i>guiding object for thermal energy</i>	thermal energy guiding object		Kind of method
		WVA	<i>thermal energy guiding object by a solid mass</i>	thermal conductor	heat sink	
WZ		WVB	<i>thermal energy guiding object by a static fluid mass</i>	thermal paste		
			<i>guiding object with multiple kinds of flows</i>	multiple flow guiding object		Kind of method
		WZA	<i>multiple flow guiding object of electric energy, mechanical energy, electrical signal, optical signals and/or fluid</i>	umbilical cable		
			<i>object for interfacing an object</i>	interfacing object		Kind of object flowing and kind of method
XB			<i>interfacing object for high voltage electric power</i>	high voltage connecting object		Kind of method
		XBA	<i>high voltage connecting object for a single connection</i>	high voltage terminal	clamp, cable head, high voltage cable joint, junction box	
		XBB	<i>high voltage connecting object for pluggable connections</i>	high voltage socket	high voltage connector	
		XBC	<i>high voltage connecting object for multiple fixed connections</i>	high voltage terminal box		
XD			<i>interfacing object for low voltage electric power</i>	low voltage connecting object		Kind of method
		XDA	<i>low voltage connecting object for a single connection</i>	electric terminal	low voltage cable joint, low voltage terminal	
		XDB	<i>low voltage connecting object for pluggable connections</i>	low voltage power socket	low voltage plug, plug, socket	
		XDC	<i>low voltage connecting object for multiple fixed connections</i>	terminal box		
		XDD	<i>low voltage connecting object for fixed connection of a flexible cable for a current-using equipment</i>	power outlet		
		XDE	<i>low voltage connecting object of multiple pluggable current-using equipment</i>	power distributor		
XE			<i>interfacing object for earth or reference potential</i>	potential connecting object		Kind of potential and method

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		XEA	<i>potential connecting object</i> for connecting to PE-conductors	PE terminal	protective conductor terminal, protective earthing conductor terminal	
		XEB	<i>potential connecting object</i> for connecting to PB conductors	PB terminal	protective bonding terminal	
		XEC	<i>potential connecting object</i> for connecting to FE-conductors	FE terminal	functional earthing terminal	
		XED	<i>potential connecting object</i> for connecting to FB conductors	FB terminal	functional bonding terminal	
		XEE	<i>potential connecting object</i> providing electrical contact with Earth	earth electrode		
		XEF	<i>potential connecting object</i> connecting lightning to an electrical circuit	collector		
		XG	<i>interfacing object</i> for electric signals	electric signal connecting object		Kind of method
		XGA	<i>electric signal connecting object</i> for single pluggable interconnections	signal socket		
		XGB	<i>electric signal connecting object</i> for a single interconnection	terminal		
		XGC	<i>electric signal connecting object</i> among several lines	patch panel		
		XGD	<i>electric signal connecting object</i> for multiple pluggable interconnections	signal distributor	hub	
		XH	<i>interfacing object</i> of optical fibres	light connecting object		Kind of method
		XHA	<i>light connecting object</i> for pluggable connections	fixed light fibre socket	optical plug, optical socket	
		XK	<i>interfacing object</i> collecting for feeding into a flow	collecting interfacing object		Kind of object collected
		XKA	<i>collecting interfacing object</i> of wastewater	sink	bidet	
		XKB	<i>collecting interfacing object</i> of faeces and urine	toilet	WC	
		XKC	<i>collecting interfacing object</i> of urine only	urinal		
		XKD	<i>collecting interfacing object</i> of surplus liquid from technical system	drip cup		
		XKE	<i>collecting interfacing object</i> of surplus	floor drain		
		XM	<i>interfacing object</i> for sealed material flow	sealed flow connecting object		Kind of method

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		XMA	sealed flow connecting object by a reversible form	tube flange	chamber, fire hose coupler, hose coupler, hose flange, pipe coupler, pipe flange	
		XMB	sealed flow connecting object by an irreversible form	tube fitting	glue fitting, hose fitting, pipe fitting, press fitting, solder fitting	
	XN		interfacing object for continuous transfer of mechanical forces	non-detachable coupling		Kind of method
		XNA	non-detachable coupling of shafts by a pair of flanges	flange coupler		
		XNB	non-detachable coupling of shafts by a splitted sleeve	split-muff coupler	box coupling, sleeve coupling	
		XNC	non-detachable coupling between parallel shafts by teeth and grooves meshing together	Hirth coupler	Hirth coupling, Hirth joint	
		XND	non-detachable coupling for transmitting power of misaligned shafts	cardan joint	flexible coupling, Hardy-Spicer joint, Hooke's joint, U-joint, universal coupling	
		XNE	non-detachable coupling to catch and connect two moving objects	buffer-and-chain coupler		
		XNF	non-detachable coupling to fix two moving objects	link-and-pin coupler		
	XP		interfacing object for interruptible transfer of mechanical forces	detachable coupling		Kind of method
		XPA	detachable coupling for power transmission by means of frictional forces	friction clutch	centrifugal clutch, hydraulic clutch	
		XPB	detachable coupling for power transmission by means of hydrodynamic effect	fluid coupling		
		XPC	detachable coupling for power transmission by interlocking means	overrunning clutch	freewheel clutch	
		XPD	detachable coupling for load by means of magnetic force	magnetic hoist	magnetic head hoisting device	
	XS		interfacing object connecting levels	level connecting object		Kind of method
		XSA	level connecting object in the form of a horizontal plane connected to a flight of stairs	landing	gangway	
		XSB	level connecting object in the form of sequential steps	flight of stairs		
		XSC	level connecting object in the form of sequential rungs or bars	ladder		

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		XSD	<i>level connecting object in the form of an inclined plane</i>	ramp		
		XSE	<i>level connecting object in the form of a vertical pole</i>	fireman's pole		
	XT		<i>interfacing object linking space</i>	space linking object		Kind of method
		XTA	<i>space linking object in the form of penetration</i>	hole	opening	
		XTB	<i>space linking object in the form of cavity</i>	box-out	cavity	
	XZ		<i>interfacing object with multiple kinds of flows</i>	multiple flow connector object		Kind of method
		XZA	<i>multiple flow connector object of electric energy, electrical signal, optical signals and/or fluid</i>	multi connector		

6 Classification of spaces

In an engineering process, it may be necessary to identify a space, e.g. a space, a corridor. In the context of IEC 81346-1, such a space should be considered as an object, and should therefore be associated with and addressed by a reference designation.

Spaces might be classified according to the classification scheme provided in Clause 5 (i.e. in Table 1, Table 2 and Table 3). However, a classification of spaces based on their inherent function might not be useful or user friendly. Therefore, this document provides a separate classification scheme of spaces as shown in Table 4.

The use of an identified space may vary throughout the life cycle of the space. In order to be able to provide a life-cycle stable designation and without need to modify any reference designation because of a changed use, the basis for the classification scheme in Table 4 is taken as being “what the space is designed for”.

Table 4 – Classification scheme for spaces

Class code			Class definition	Class name (preferred term)	Examples
1	2	3			
A	AA		space designed for human dwelling and related activities	space for human dwelling	
			space for human dwelling for rest, relaxation, recreation or waiting	occupiable space	
		AAA	occupiable space for personal use	room	bedroom, children's play room, hotel room, lounge, suite
		AAB	occupiable space for shared use	living space	balcony, break room, clubroom, coffee room, dining room, dormitory, living room, playroom, sitting room, smoking room, terrace, ward
		AAC	occupiable space for waiting	waiting space	drawing room, emergency assembly point, gate, lounge, reception room, withdrawing room
		AAD	occupiable space outdoors entirely or partly surrounded by buildings	courtyard	atrium, garden, patio, yard
	AB		space for human dwelling for personal hygiene use	personal hygiene space	
		ABA	personal hygiene space enabling persons to wash and possibly relieve themselves	bathroom	disabled lavatory, ladies room, lavatory, loo, men's room, restroom, urinal, WC
		ABB	personal hygiene space enabling persons to relieve themselves	toilet	bath, disabled lavatory, ladies room, men's room, lavatory, loo, restroom, urinal, washroom, WC
		ABC	personal hygiene space for hygienic care of babies	baby changing room	baby change area, baby changing area, nappy changing room
AC		ABD	personal hygiene space for changing clothes	changing room	gents changing area, hospital, ladies changing area, locker room, work area
		ABE	personal hygiene space enabling persons to wash themselves	shower	changing room, baths, locker room, shower niche
		ABF	personal hygiene space enabling persons to take a sweat-inducing bath	sauna	sauna room, steam room, Turkish bath
			space for human dwelling for isolating persons	isolation space	
		ACA	isolation space to protect persons from hazardous or dangerous situations	shelter	air-raid shelter, bothy, bunker, decompression chamber, earthquake shelter, isolation ward, medical isolation unit, panic room, safe room, weather shelter
		ACB	isolation space to separate persons from other persons	cell	isolation cell, padded cell, prison cell, special handling unit

Class code			Class definition	Class name (preferred term)	Examples
1	2	3	space designed for humans' leisure and business activities space for human activity for producing an immaterial result workspace for the production, processing and interpretation of information workspace for meetings workspace for receiving guests and goods workspace for selling goods and services workspace conveying knowledge and competencies workspace for reading workspace for laundering clothes and linen workspace for health-related and other treatment and care of individuals	space for human activity	
B	BA			workspace	
	BAA			office	box office, call centre, cell office, guard room, information stand, managers office, open plan office, sales office, single office, ticket office
	BAB			meeting space	boardroom, conference room, constituency office, consultation room, council hall, courtroom, interrogation room, interview room, meeting room, town project room, union room, witness room
	BAC			reception	counter, information desk, customer service area, hotel reception area
	BAD			sales area	auction gallery, bar, beauty salon, box office, branch, dogs grooming room, food retail counter, hairdressing saloon, kiosk, sales floor, saloon, shop, sunbed room, ticket office
	BAE			teaching space	auditorium, classroom, creative workshop, language laboratory, lecture hall, lecture room, music room, multimedia room, science room, simulator, gymnasium, studio, tutorial lab
	BAF			study	library, quiet room, reading room, study room, reference room
	BAG			laundry	laundrette, laundry, laundry room, utility room, wash house
	BAH			treatment space	apheresis room, chemotherapy room, dialysis room, electrocardiogram room (ECG-room), electroconvulsive therapy room (ECT-room), first-aid room, incubator room, occupational therapy room, operating theatre, massage room, maternity ward, physiotherapy room, post-treatment room, preadmission room, pressure chamber, pre-treatment room, surgery, test room, therapy room, trauma room

Class code			Class definition	Class name (preferred term)	Examples
1	2	3			
		BAJ	workspace for diagnosis	examining space	electrocardiogram room (ECG-room), electroconvulsive therapy room (ECT-room), first-aid room, maternity ward, operating theatre, preadmission room, surgery, test room, trauma room, tri-age room
		BAK	workspace for monitoring individuals	observation space	intensive care room, incubator room, isolation room, pressure chamber, recovery room
		BAL	workspace for observing processes and persons in adjacent space	viewing space	execution room, experimental research room, gallery, interrogation room, lodge, market research room, operations desk, security observation deck in public areas, technical gallery
		BAM	workspace for recording and editing media	media workshop	cutting room, dark room, drawing office, editing room, film studio, print room, recording studio, sound studio
	BB		space for human activity for producing a material result	production space	
		BBA	production space for working with foodstuffs	kitchen	bakery, canteen, food preparation area, kitchenette, pastry kitchen, professional kitchen, scullery, tea kitchen
		BBB	production space for working with materials	materials workshop	cutters workshop, forge, paint shop, metal shop, studio, woodwork room, workshop
		BBC	production space for working with machinery and equipment	machine shop	garage, IT workshop, mechanics pit, mechanical workshop, plate shop, workshop
		BBD	production space for working on art and crafts	studio	ceramic workshop, dressmaker's workshop, glass workshop, pottery, production hall
		BBE	production space for sorting and packing objects	packing space	mail room, medicine room, packing room, sorting office, storehouse, storeroom, warehouse
	BC		space for human activity for performing analyses and tests	laboratory	
		BCA	laboratory for technical analyses	technical laboratory	acoustic testing lab, chemical laboratory, optics laboratory, radiography laboratory, scientific testing room, sound lab, weigh room
		BCB	laboratory for studying materials	materials laboratory	building physics laboratory, crash test area, fire test area, polymer laboratory, wave simulation tank room, wind tunnel

Class code			Class definition	Class name (preferred term)	Examples
1	2	3			
C	CA	BCC	laboratory for biological analysis	biology laboratory	fermentation laboratory, food laboratory, medical laboratory, virus laboratory
		BD	space for human activity of sport or culture	practice space	
			practice space for sports	sports hall	athletic facility, ball game hall, ice dome, ice hall, ice rink, riding arena, swimming facility, swimming pool (indoor)
		BDA			
		BDB	practice space for training strength, condition and balance	training room	fitness centre, fitness room, gym, weights room
		BDC	practice space for practicing artistic competencies	rehearsal room	ballet rehearsal room, music practice room, rehearsal stage
		BDD	practice space for performance artistic works	stage	orchestra pit, rehearsal stage, studio
		BDE	practice space for children	playroom	children's play room, soft play area
		BE	space for human activity for mass assemblies of people/persons	assembly space	
			assembly space for consumption of food	dining space	café, canteen, common room, eatery dining hall, dining room, langar, mess hall, restaurant
C	CA	BEA			
		BEB	assembly space for social events	hall	ballroom, city chamber, club house, community centre, gathering room, lodge, lounge, masonic hall, meeting hall, music hall, village hall
		BEC	assembly space for displaying objects	gallery	art gallery, showroom
		BED	assembly space for religious activities	religious faith space	Buddhist shrine room, chapel, church room, Darbar sahib, musallah, prayer room, religious faith room
		C	space designed for storage of materials, equipment and organisms	storage space	
			storage space for resources	material storage space	
		CAA	material storage space for refused and rejected materials or objects	refuse storage space	bin room, container storage, garbage area, recycling area, refuse room, rubbish store, waste disposal room
		CAB	material storage space for chemicals	chemicals storage space	chemical disposal area, inflammable materials storage room
		CAC	material storage space for medicines	medicine storage space	blood deposit, chemist, medicine cupboard, pharmacy
		CAD	material storage space for physical documents or media	archive storage space	document archive, drawing archive, journal archive, library, records archive

Class code			Class definition	Class name (preferred term)	Examples
1	2	3			
		CAE	material storage space for fluid	fluid storage space	oil reservoir, fat reservoir, fuel tank, liquid storage cabinet, safety cans, water basin, water pool, water reservoir
		CAF	material storage space for items for use in production processes	raw materials storage space	earth repository, combustible material cabinet, paper depot, salt repository, sand repository
		CAG	material storage space for food and drinks	food storage space	beer cellar, cold store, dry goods store, grain store, hot store, larder, refrigerated store, scullery, silo, wine cellar
		CAH	material storage space for valuable objects	secure storage space	bank, night depository system, safe, safety deposit box, showcase, vault
		CAJ	material storage space of materials for packaging	packaging storage space	box room, packaging depot
		CAK	material storage space for clothing, shoes and linen	clothes storage space	automatic wardrobe, cupboard, drying loft, drying room, laundry, linen depot, linen store, theatre cloakroom, walk-in closet, wardrobe
		CAL	material storage space for building materials	building materials storage space	electrical depot, heating water and sanitation (HWS) depot, lumber yard, masonry depot, timber depot
		CAM	material storage space for explosives	explosives space	ammunition bunker, ammunition chamber, ammunition depot, dynamite room, fireworks room
		CAN	material storage space for products, goods and cargo	stockroom	cargo storage, goods storage
	CB		storage space for moveable technical equipment	equipment storage space	
		CBA	equipment storage space of objects for fitting out (of spaces)	furniture storage space	backstage, basement room, depository, loft storage room, roof storage room, side stage, storage cupboard warehouse
		CBB	equipment storage space for tools	tool storage space	cleaning cupboard, equipment room, garage, garden shed, potting shed, utility shed, weapons workshop
		CBC	equipment storage space for technical instruments	instrument storage space	aircraft apparatus storage, apparatus storage, medicotechnical storage
		CBD	equipment storage space for modes of transport	vehicle storage space	apron, bicycle store, boat shed, bus depot, carpark, container base, cycle shed, depot, dock, dry-dock, electrical vehicle charging place, garage, hangar, lorry park, parking area, parking space, train depot, truck-dock

Class code			Class definition	Class name (preferred term)	Examples
1	2	3			
CC	CD		storage space for enclosing animals	animal enclosure	
		CCA	animal enclosure for keeping animals locked up	cage	aviary, bird cage, enclosure, reserve, terrarium
		CCB	animal enclosure for keeping animals fenced in	stall	aviary, box, cage, enclosure, pen, reserve, vivarium
		CCC	animal enclosure for providing shelter	stable	cowshed, hobby shed, pig shed, production shed, sheep shed
		CCD	animal enclosure for keeping animals in water	water enclosure	aquarium, aquafarming enclosure, fish tank, ocean enclosure, pond, pool
CD	CDA		storage space for plants	planting space	
			planting space for growing plants indoor	indoor planting space	botanical garden, conservatory, greenhouse, hothouse, orangery, palm garden, solarium, sunroom, tropical garden, winter garden
		CDB	planting space for growing plants outdoor	outdoor planting space	apple garden, herb garden, rose garden
CE	CEA		storage space for dead bodies	dead body storage	
			dead body storage for interim storage	chapel of rest	cold room, morgue, mortuary
		CEB	dead body storage for permanent storage	crypt	columbarium, mausoleum
DA	DAA		space designed for active technical equipment	space for technical systems	
			space for technical systems which support the function of construction entities	installation space	
			installation space for electric equipment	electric installation space	accumulator room, battery room, converter hall, fuse room, generator room, high voltage room, meter room, no-break room, reactor hall, switch room, switchgear room, transformer area, transformer room
		DAB	installation space for electronic equipment	information technology (IT) equipment space	backup room, computer room, data centre, distributed systems room, main distribution room, server farm, server room, switch room
		DAC	installation space for mechanical equipment	mechanical installation space	elevator room, engine room, hoist room, lift equipment room, pressurized cylinder room, motor bay, motor room, refrigerator room

Class code			Class definition	Class name (preferred term)	Examples
1	2	3	installation space for multiple kinds of technical equipment	shared installation space	booster room, climate room, compressor room, district heating plant, filter room, heating plant, installations room, landing gear bay, operations room, plant room, service room, technical room, thermal power plant, ventilation room
DB		DAD		equipment space	
		DBA		control equipment space	command centre, control centre, cutting room, editing room, light control room, mixer room, operations room, producer room, radar room
		DBB		production plant space	engine room, print shop, slaughter room, sorting plant hall, turbine hall
		DBC		service equipment space	copy centre, copy room, fax room, printer room, projector room, Xerox room
		DBD		analysis equipment space	CT scanner room, laboratory, MR scanner room, observatory, X-ray room
DC			space for technical systems which provides space for equipment operation	equipment operation space	
		DCA	equipment operation space providing equipment movement space	work envelope	robot work envelope
		DCB	equipment operation space providing clearance around equipment	clearance space	safety zone
EA			space designed to create links between activity spaces	space for infrastructure	
			space for infrastructure providing access	circulation space	
		EAA	circulation space between outdoor and indoor spaces	vestibule	antechamber, double door, entrance, foyer, hall, lobby, porch, security door, storm door, vestibule, weather porch, wing exits
		EAB	circulation space for regulating passage between spaces	air lock	carousel, foyer, lobby, porch, storm door, swing door, vestibule
		EAC	circulation space horizontally between two or more spaces	corridor	antechamber, anteroom, external gallery, foyer, hall, platform
		EAD	circulation space vertically and non-automated between two or more storeys or levels	stairwell	close, stairs, stairway, stairwell
		EAE	circulation space vertically and automated between two or more levels	lift space	dumb waiter, elevator cage, hoist, lift car, pulley cart, stair lift, window cleaning cradle
		EAF	circulation space through a building	portico	coach gate, passage, passageway

Class code			Class definition	Class name (preferred term)	Examples
1	2	3			
EB			space for infrastructure for distributing technical services or media	services space	
		EBA	services space with horizontal access for persons	services tunnel	access gang, attic, crawl way, gangway, lighting gangway, lighting passage, loft, maintenance corridor, services tunnel, technical passage, technical tunnel, ventilation shaft
		EBB	services space with vertical access for persons	shaft	disposal shaft, elevator shaft, maintenance shaft, technical shaft, ventilation shaft, waste installation shaft
		EBC	services space without access for persons	duct	air intake, air outlet, air shaft, chimney, mixing chamber, ventilation duct
FA			space for traffic	traffic space	movement space
			traffic space for vehicles	vehicle traffic space	highway, motorway, road, road tunnel, street, tunnel
		FAA	vehicle traffic space intended for vehicles	carriageway	
		FAB	vehicle traffic space for one line of traffic	traffic lane	roadway
		FAC	vehicle traffic space along a carriageway for emergency and intermediate use	shoulder	verge, road verge
		FAD	vehicle traffic space for stopping of vehicles	lay-by out lane	bus stop, bus turnout, turn-out lane
		FAE	vehicle traffic space for meeting of vehicles	passing place	
		FAF	vehicle traffic space for turning of vehicles	turning place	
FB			traffic space for persons, animals or bicycles	active transportation space	active traffic space
		FBA	active transportation space for pedestrians	walkway	sidewalk, pavement, footpath, pedestrian tunnel
		FBB	active transportation space for bicycles	cycle path	bicycle lane, cycle lane
		FBC	active transportation space for bicycles and pedestrians	cycle- and footpath	
		FBD	active transportation space for animals	animal path	bridle path, bridleway
			traffic space for aircraft	aircraft traffic space	
FC		FCA	aircraft traffic space for take-off and landing	runway	
		FCB	aircraft traffic space for taxiing	taxiway	perimeter track
			traffic space for track bound objects	track space	
FD		FDA	track space not intended for crossing	rail track	

Class code			Class definition	Class name (preferred term)	Examples
1	2	3			
	FE	FDB	track space intended for crossing	railway crossing	
			traffic space for vessels	vessel traffic space	
		FEA	vessel traffic space for horizontal traffic	fairway	canal
		FEB	vessel traffic space for vertical traffic	sluice	
	FF		traffic space for separation and management	traffic management space	
		FFA	traffic management space separating traffic spaces	dividing strip	
		FFB	traffic management space for change of transport mode	platform space	
		FFC	traffic management space providing information	traffic information space	
		FFD	traffic management space providing clearance to other objects	clearance profile	building gauge, clearance, clearance zone
		FFE	traffic management space being part of road or street not meant for vehicle traffic	prohibited area	
			space designed for the occurrence of physical phenomena	physical phenomenon space	
PA			physical phenomenon space for flow or occurrence of matter	matter flow space	
		PAA	matter flow space for objects	debris space	debris zone, engine burst zone
		PAB	matter flow space for solid materials	solid material flow space	
		PAC	matter flow space for gas	gas flow space	engine exhaust zone, engine ingestion area
		PAD	matter flow space for liquid	liquid flow space	condensation collection space
		PAE	matter flow space for plasma	plasma flow space	
		PAF	matter flow space for multiple matter kinds	smoke occurrence space	smoke spread
			physical phenomenon space for flow of energy	energy flow space	
		PBA	energy flow space for electrical energy	electrical energy flow space	lightning strike zone
		PBB	energy flow space for thermal energy	thermal energy flow space	thermal spread zone
		PBC	energy flow space for mechanical energy	mechanical energy flow space	impact zone, bump zone
	PB	PBD	energy flow space for explosion	explosion space	
		PBE	energy flow space for combustion	fire zone	gas flare zone

7 Classification of objects applicable for infrastructure

Each object can basically be classified according to Table 1, Table 2 and Table 3, and be coded with the associated letter codes. However, objects like industrial complexes consisting of different production facilities, or factories consisting of different production lines and related auxiliary facilities, often have the same inherent function and therefore belong to a restricted number of classes. In the context of this document, these types of objects are called infrastructure objects.

NOTE 1 Infrastructure is understood as the basic structure of an industrial installation.

In many cases, it is advantageous to apply an alternative classification scheme and related letter codes for the differentiation of the constituent objects in a given level of a structure.

Table 5 provides a frame for setting up classification schemes and associated letter codes for infrastructure objects. Some facilities are identified that are common to most applications. These should be assigned letter codes according to classes A and V to Z of Table 5.

NOTE 2 Objects indicated in the table as “not related to the main process” can in other cases be regarded as main-process facilities. It is possible to shift these objects then to the more appropriate section in Table 5.

The classification of the main facilities of the process described is, to a great extent, branch-related. Classes B to U of Table 5 are reserved for this purpose.

The use of a classification scheme according to infrastructure and its relation to objects represented in a tree-like structure shall be explained in the document where it is applied or in supporting documentation.

NOTE 3 The use of different classification schemes in a reference designation makes their interpretation more difficult or even impossible without explanation.

Examples of some branch-related applications of classes B to U are shown in Table 6.

NOTE 4 The letter codes shown in Table 6 are not intended to prescribe any future branch-related standardization. They only illustrate the principle.

NOTE 5 In Table 6, the phrase “Not used” indicates that the corresponding letter code is not defined in the relevant classification scheme. It does not prohibit the use of such a letter code if required for a class not defined so far. However, there is a risk that in a later edition of this document these letter codes will represent additional standardized classes that are different from the freely applied ones.

Annex C illustrates how the classes of Table 5 relate to objects in a generic infrastructure.

Table 5 – Classes of infrastructure objects

Class code	Class definition	Class name	Examples
A	Objects for overall management of other infrastructure objects	Common tasks infrastructure object	Supervisory control system
B to U	Objects for main process facilities NOTE 1 Precise definitions open to different branches NOTE 2 Letters I and O are not to be used.	Main process facility infrastructure object	See examples in Table 6
V	Objects for storage of material or goods	Main process storing infrastructure object	Finished goods store Fresh-water tank plant Garbage store Oil or gas tank plant Sewage or soakage pits or tanks Raw materials store
W	Objects for administrative or social purposes or tasks	Administrative infrastructure object	Exhibition hall Garage Office Recreation area
X	Objects for fulfilling auxiliary purposes or tasks without the process (for example, on a site, in a plant or building)	Auxiliary infrastructure object	Air conditioning system Alarm system Clock system Crane-system Electric LV power distribution system Fire protection system Gas-supply system Lighting installation system Security system Sewage disposal system Water-supply system
Y	Objects for communication and information tasks	Communication infrastructure object	Antenna system Computer network system Loudspeaker system Paging system Railway signal system Staff locating system Telephone system Television system Traffic light system Video surveillance system
Z	Objects for housing or enclosing technical systems or installations like areas and buildings	Technical infrastructure object	Building Constructional facilities Ducts or tunnels for cabling or piping Factory site Fence Railway line Road Wall

Table 6 – Examples of branch-related classes B to U of Table 5

	Oil refinery			Electric power distribution station			Canteen
A	As required in Table 5		A	As required in Table 5		A	As required in Table 5
B	Catalytic cracking plant		B	Installations with $U_n > 420 \text{ kV}$		B	Not used
C	Catalytic reformer		C	Installations with $380 \text{ kV} \leq U_n \leq 420 \text{ kV}$		C	Kitchen
D	Not used		D	Installations with $220 \text{ kV} \leq U_n < 380 \text{ kV}$		D	Not used
E	Desulphurization plant		E	Installations with $110 \text{ kV} \leq U_n < 220 \text{ kV}$		E	Counter
F	Distillation plant		F	Installations with $60 \text{ kV} \leq U_n < 110 \text{ kV}$		F	Not used
G	Not used		G	Installations with $45 \text{ kV} \leq U_n < 60 \text{ kV}$		G	Cash-desk
H	Gas-separating plant		H	Installations with $30 \text{ kV} \leq U_n < 45 \text{ kV}$		H	Not used
J	Lubricating oil refinery		J	Installations with $20 \text{ kV} \leq U_n < 30 \text{ kV}$		J	Dish-washer facilities
K	Not used		K	Installations with $10 \text{ kV} \leq U_n < 20 \text{ kV}$		K	Not used
L	Not used		L	Installations with $6 \text{ kV} \leq U_n < 10 \text{ kV}$		L	Not used
M	Not used		M	Installations with $1 \text{ kV} \leq U_n < 6 \text{ kV}$		M	Not used
N	Not used		N	Installations with $U_n < 1 \text{ kV}$		N	Not used
P	Not used		P	Not used		P	Not used
Q	Not used		Q	Not used		Q	Not used
R	Electric power and steam generating station		R	Not used		R	Not used
S	Electric power distribution station		S	Not used		S	Not used
T	Not used		T	Transformer plants		T	Not used
U	Not used		U	Not used		U	Not used
V to Z	As required in Table 5		V to Z	As required in Table 5		V to Z	As required in Table 5

The classification schemes from different branches may be used in subsequent levels of a structure.

EXAMPLES Possible combinations of the above shown classes:

For an electric power distribution system: the designation = S1E1 or #S1E1 may indicate the first 110 kV plant in the first electric power distribution station of an oil refinery.

For a canteen: the designation -W1E1 or +W1E1 may indicate the counter facilities in the canteen of the same oil refinery.

Annex A (informative)

Classification criteria for objects

A.1 General

In order to classify a collection of objects, it is necessary to start by defining the purpose of the classification. This document to serve the following purposes:

- Establish a human recognizable letter code for object types;
- Form part of a reference designation in accordance with IEC 81346-1;
- Form the basis for model semantics and ontology for model-based design.

The rules and guidelines for classification are given in:

- ISO 704: Terminology work – Principles and methods; and
- ISO 22274: Systems to manage terminology, knowledge and content – Concept-related aspects for developing and internationalizing classification systems

to which the classification tables in this document comply.

ISO 704:2009, 6.3.2 states that “The definition begins with a predicate noun stating the border generic (superordinate) concept associated with the concept being defined, together with delimiters indicating the characteristics that delimit the concept being defined from coordinate concepts.” This rule has been carried out consequently in the definitions of the entry class (level 1), sub-class (level 2) and sub-sub-class (level 3) given in this document.

A.2 Structure of classes and subclasses

By nature, classification systems are tree-like structures arranged in type-of relations, where each new entry level is defined by a new sorting criterion, see Figure A.1. A brief study carried out on the revision of this document has shown that this should also be the case for the classes applied.

However, for practical and historical reasons, the letter coding in this document are kept to a maximum of three letters. This means, that some levels in the classification contain more than one characteristic, for example class CM: “Enclosed stationary storing object”, where both “enclosed” and “stationary” are characteristics of the subclass.

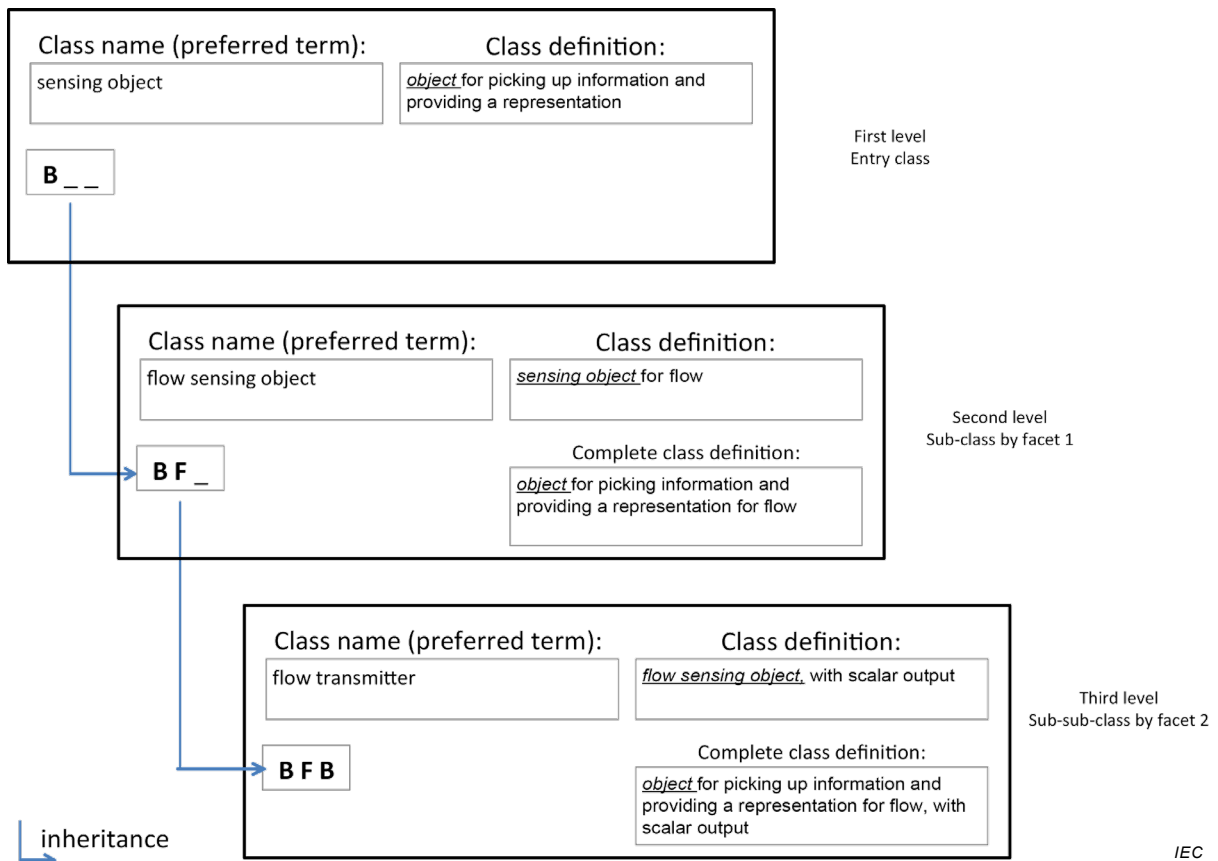


Figure A.1 – Illustration of class hierarchy

A.3 Definition of classes

According to ISO 704, each class is determined by its definition and has in addition a preferred term. It is the definition which is framing the content of the class, whereas the preferred term is the name by which the class is recognized. Objects which have characteristics compliant with the definition of the class belong to the class.

In accordance with ISO 22274, classification systems with “miscellaneous” or “combined” classes are designated as an enumerative classification system. Among other things, they tend to list all possible subjects within their defined area of applicability. Within this document, the higher levels of the classification system follow an enumerative approach (the inherent function) to narrow down the areas of applicability of the individual classes to a manageable size. At the lower levels, faceted approaches (guiding, sensing, covering, etc.) are applied to clearly specify the nature of the concepts contained in the leaf classes of the classification system.

As the definitions in the classification system of this document are precise and distinct, they are capable of adapting objects (or “names”) not listed within the tables. Subsequently classes of “miscellaneous” or “combined” have been avoided to a large extent.

Annex B (informative)

Object classes related to a generic process

Figure B.1 shows classes of objects according to Table 1 related to a generic process. The objects perform activities that directly initiate or influence the flow, and activities that indirectly influence the flow or monitor its condition. Both are supported by activities or objects that do not influence the flow, but are necessary resources, sometimes acting in a static way.

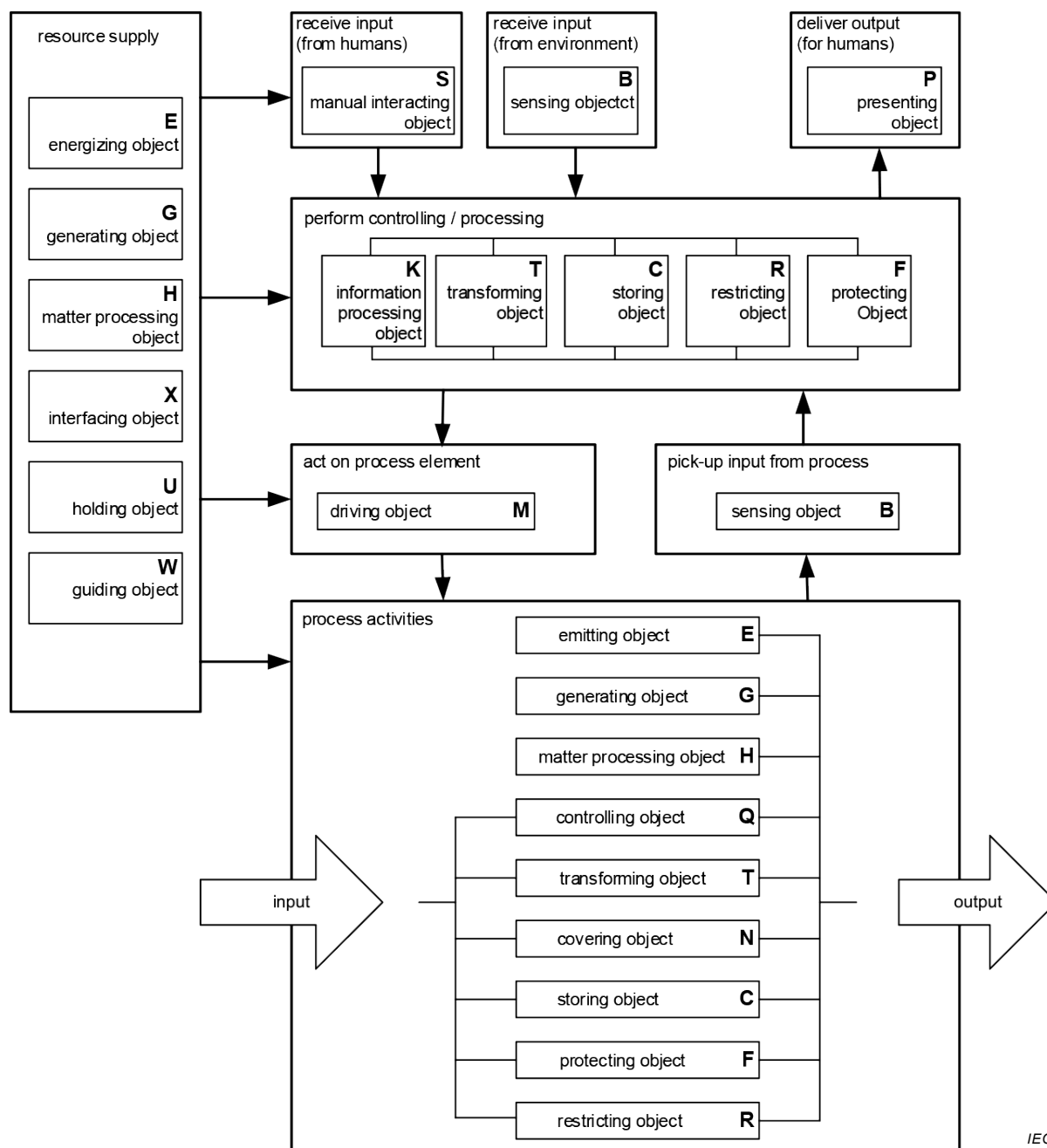


Figure B.1 – Object classes related to a generic process

The same class of objects appears at different places in this model, showing that objects are classified without considering the position of the object in the process.

Annex C (informative)

Object classes related to objects in a generic infrastructure

Figure C.1 shows classes of objects according to Table 5 related to a technical system environment. It contains objects that represent main-process facilities (Classes B to U) and objects for secondary tasks besides objects for the main process (Classes V to Z). Main-process facilities are normally defined by the owner of the complete installation or predefined by branch-related standards. For example, different production plants in an industrial complex could be seen as main-process facilities. A power generating plant in the same complex could, depending on the point of view, be classified also as a main-process facility or as an auxiliary facility.

While the definition of classes for main-process facilities may change from case to case, the definition of classes for auxiliary facilities is fixed for most applications. Facilities like air-conditioning, lighting installation, water supply, offices, telephone system, buildings or roads occur in most different kinds of installations. They do not directly influence the main processes but are nevertheless important constituents of the infrastructure.

Class A is reserved for objects that act on more than one object related to Classes B to Z. An example is a centralized control panel, controlling different production plants as well as the air-conditioning system and other equipment.

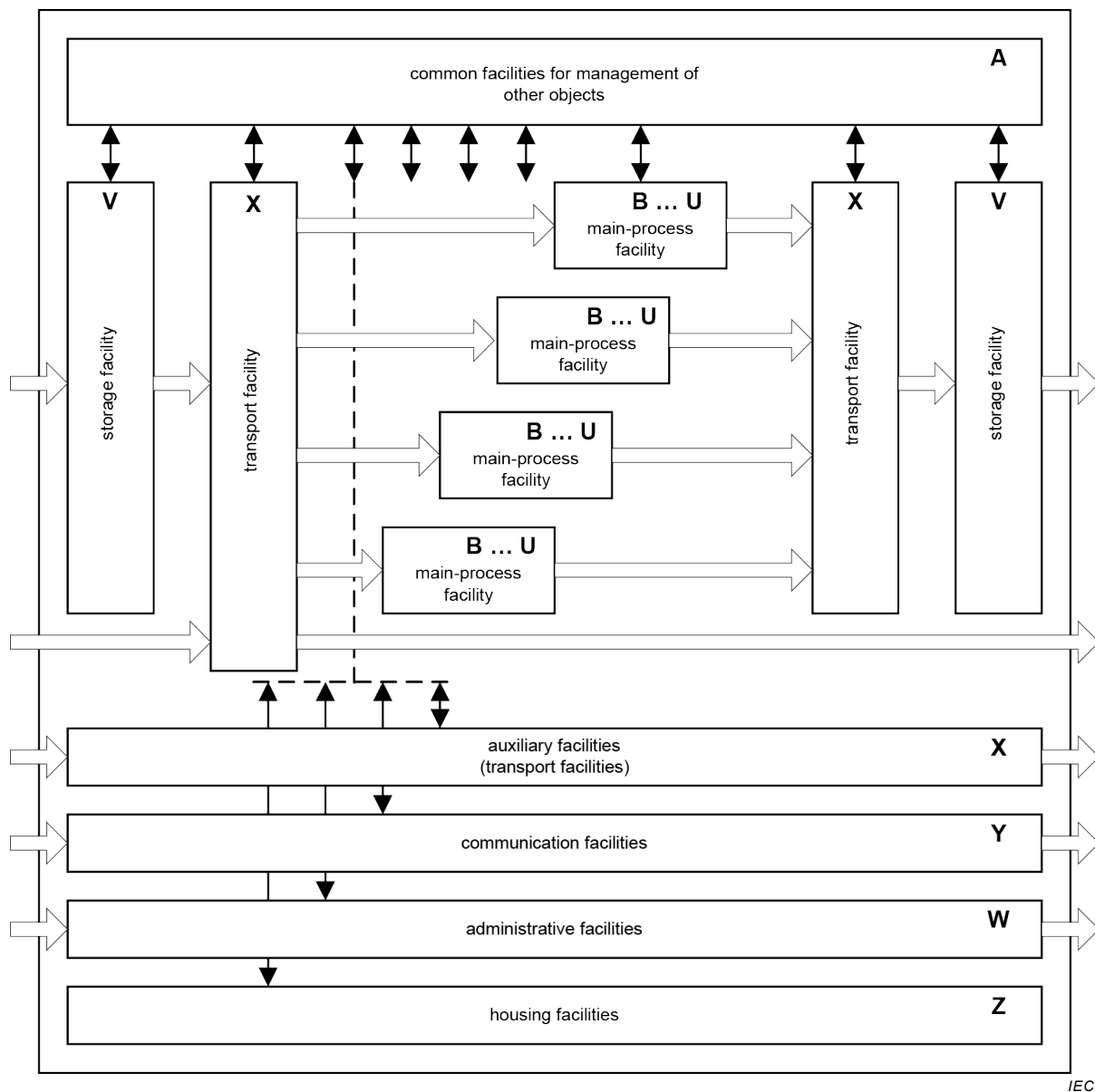


Figure C.1 – Object classes related to objects in a generic infrastructure

Annex D (informative)

Comparison between Tables 1, 2 and 3 of this document and Tables 1 and 2 of IEC 81346-2:2009

Table D.1 and Table D.2 provide an overview of the changes between IEC 81346-2:2009 and this document. It has been the intention to keep upwards compatibility for the first and second letter code between both editions, where possible.

Due to the different approaches for classification in the previous edition and this document, minor changes could not be avoided. Completely new classes have been assigned to previously not used letter codes. In the former edition the focus was to classify the object according to its intended usage, whereas this edition has the focus to classify the object based on its inherent function as decided by the designer/manufacture of the object, i.e. independent of any usage of the object. It was also noted that some classes in the former edition have been found inconsistent.

In IEC 81346-2:2009, the second letter codes are clustered in a way that the second letter A to E was related to electric energy, letter F to K was for related to information and signalling while letter L to Y was related to object for process-, mechanical and construction engineering. This clustering is no longer maintained as it is not a feature of a classification system.

**Table D.1 – Comparison between Table 1 of the current edition
and Table 1 of IEC 81346-2:2009**

Letter code in Table 1 of IEC 81346-2:2009	Comments
A	Deleted. Does not fit to the classification scheme
N	New class
V	Deleted. Covered by H

**Table D.2 – Comparison between Table 2 and Table 3
of the current edition and Table 2 of IEC 81346-2:2009**

Letter code in Table 2 of IEC 81346-2:2009	Comments
BB	New class.
BE	Class definition modified.
BG	Class definition made more specific.
BH	New class.
BQ	Class definition made more specific.
BX	Class definition made more specific. Other quantities not included.
BZ	Covers incidents and amounts. Combined tasks are not included.
CZ	Deleted.
EE	Class definition made more specific.
EF	Deleted. Covered by TFB.
EL	Deleted. Covered by EAB and EAC.
EN	Deleted as no longer needed. Covered by EG and EQ.
EM	Class definition modified. Covered by EG and EM.

Letter code in Table 2 of IEC 81346-2:2009	Comments
EP	Class definition made more specific.
EQ	Class definition made more specific.
ER	Deleted as no longer needed. Obsolescence technology. Covered by EP.
ES	Deleted as no longer needed. Obsolescence technology. Covered by EQ.
EZ	Deleted.
FN	Class definition made more specific.
FP	Deleted. Covered by FR and other various classes.
FQ	Class definition made more specific.
FZ	Deleted.
GR	New class.
GS	Deleted. Covered by GQ.
GT	Deleted. Covered by GPD.
GZ	Deleted.
HJ	New class.
HK	New class.
HM	Class definition made more specific.
HN	Deleted. Covered by HMA.
HQ	Class definition modified. Covered by HQA.
HS	Class definition made more specific.
HT	Deleted. Covered by HXA.
HU	Class definition modified. Covered by HUC.
HX	Class definition modified. Covered by HXA.
HY	Deleted. Covered by HXB
HZ	Deleted.
KE	New class.
KG	Class definition made more specific.
KF	Class definition modified. Covered by KF and KE.
KK	Deleted. Partly covered by other subclasses of entry class K and also entry class B.
KZ	Class definition made more specific.
MA	Class definition modified. Covered by MA and MB.
MB	Class definition modified. Covered by MB and MC.
MC	New class.
MD	New class.
MN	Deleted. Covered by MLE.
MP	Deleted. Covered by MLE.
MQ	Deleted. Covered by MLC.
MR	Deleted. Covered by MLD.
MZ	Deleted.
PL	New class.
PZ	Class definition made more specific.
QL	Deleted. Covered by RLC.
QR	Modified with precise definition for solid substances. Existing examples are covered by QM and QP.

Letter code in Table 2 of IEC 81346-2:2009	Comments
QS	New class.
RQ	Modified with definition related to the local environment. Covered by RQA.
RP	Deleted. Covered by RQC.
RR	Deleted. Covered by RQA and RQC.
RS	Deleted. Covered by RQB.
RT	Deleted. Covered by RQE, RQF and RQG.
RZ	Deleted.
SF	Class definition modified. Class S applies a completely different criterion for the sub-classes.
SG	Class definition modified. Class S applies a completely different criterion for the sub-classes.
SH	Class definition modified. Class S applies a completely different criterion for the sub-classes.
SJ	Class definition modified. Class S applies a completely different criterion for the sub-classes.
SK	New Class.
SZ	Deleted.
TC	New class.
TQ	Deleted. Covered by TPA.
TR	Class definition modified. Covered by WHC and WHD.
TZ	Deleted.
UA	Class definition modified. Covered by UA and UB.
UB	Class definition modified. Covered by UA and UB.
UF	Deleted. Covered by Covered by UA and UB.
UG	Deleted. Covered by UBA.
UH	Deleted. Covered by UCA.
UM	Class definition modified. Covered by UL and UM.
UN	Class definition modified. Covered by UL.
UP	Class definition made more specific.
UR	Deleted. Covered by UQ.
US	Deleted. Covered by Table 4 – Classification scheme for spaces.
UZ	Deleted.
WA	Deleted. Covered by WBA.
WB	Class definition made more specific.
WC	Deleted. Covered by WDA.
WD	Class definition made more specific.
WJ	New class.
WN	Deleted. Covered by WQ.
WS	Deleted. Covered by UB.
WT	Deleted. Covered by Table 4 – Classification scheme for spaces.
WZ	Deleted.
XF	Deleted. Covered by XG.
XK	New class.
XL	Deleted. Covered by XM.
XQ	Deleted.

Letter code in Table 2 of IEC 81346-2:2009	Comments
XR	Deleted. Covered partly by XN.
XS	New class.
XT	New class
XZ	Class definition made more specific.

Annex E

(informative)

Basic requirements for the development of IEC 81346-2

The basic requirements were developed during the preparation of IEC 61346-2:2000, and accepted by vote by the national committees. These requirements were not modified in the first edition of IEC 81346-2:2009.

In the preparation of this second edition of IEC 81346-2, the basic requirements have been reviewed and updated. The modifications have been accepted by vote by the national committees.

NOTE 1 These basic requirements concern the development of the letter codes classification system in this document and not its application. They are therefore not normative vis-à-vis the application of this document.

- a) Letter codes shall be based on a classification scheme.
- b) A classification scheme is the set of definitions for the types of objects (for example, a classification scheme for function types containing the definition of the different function types of objects).
- c) A classification scheme shall allow for hierarchical classification of types of objects, i.e. subclasses and superclasses.
- d) A letter code for a type of object shall be independent of the actual position of the instances of that type of object in a system.
- e) Distinct classes shall be defined on each level of the classification scheme.
- f) The definitions of the classes of a particular level within a classification scheme shall have a common basis. The basis, however, may vary from one level to another.

NOTE 2 For example, a classification scheme that, on one level, classifies objects according to colour, classes that classify objects by shape are not appropriate.

NOTE 3 This requirement does not exclude that two or more criteria are combined to constitute the common basis.

- g) A letter code should indicate the type of object and not an aspect of this object.
- h) A classification scheme shall allow for expansion in order to take into account future development and needs.
- i) A classification scheme shall be usable within all technical areas without favouring a specific area.
- j) It shall be possible to use the letter codes consistently throughout all technical areas. The same type of object should preferably have only one letter code independent of the technical area where it is being used.
- k) A classification scheme should reflect the practical application of letter codes.
- l) Letter codes should not be mnemonic, as this cannot be implemented consistently throughout a classification scheme and for different languages.
- m) Letter codes shall be formed using capital letters from the Latin alphabet, excluding I and O due to possible confusion with the digits 1 (one) and 0 (zero).
- n) Different classification schemes shall be allowed and be applicable for the same type of object.
- o) The definition of the classes shall follow the principles specified in ISO 704 and ISO 22274.

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