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Part 2: Classification of objects and codes for classes

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

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IEC TC 3 : DOCUMENTATION, GRAPHICAL SYMBOLS AND REPRESENTATIONS OF TECHNICAL INFORMATION	
SECRETARIAT: Sweden	SECRETARY: Mr Mikael Törnkvist
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 8,TC 9,SC 17C,TC 22,SC 22F,SC 22H,TC 31,TC 44,SC 45A,TC 57,TC 64,TC 65,SC 65A,SC 65E,TC 69,TC 82,TC 88,TC 120,SC 121A,SC 121B,TC 122,PC 126,PC 127,SyC SM,SyC Smart Cities,SyC Smart Energy,ISO/IEC JTC 1/SC 25	PROPOSED HORIZONTAL STANDARD: ☒ Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	

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TITLE:

Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 2: Classification of objects and codes for 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 third edition cancels and replaces the second edition published in 2019. This edition constitutes a technical revision.

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

- a) the existing class definitions have been reviewed and unclearness has been clarified;
- b) in Table 2, some class names have been modified and the following new classes have been added: FT, RG, RP, TD, UV and WS;
- c) in Table 3, new classes are added, class names have been modified and classes considered to be obsolete are marked using a grey scale font;
- d) in Table 4, new classes are added, class names have been modified and classes considered to be obsolete are marked using a grey scale font;
- e) more examples are added to a number of classes;
- f) classification scheme for construction complexes and construction entities has been added.

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

FDIS	Report on voting
3/xxx/FDIS	3/xxxx/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. The codes are 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

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

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

199 3.3

200 **class of object**

201 set of objects characterized by the same inherent function

202 3.4

203 **space**

204 limited three-dimensional extent defined physically or notionally

205 [SOURCE: ISO 12006-2:2020, 3.1.8]

206 3.5

207 **type-of relation**

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

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

211 3.6

212 **part-of relation**

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

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

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

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

218 3.7

219 **activity space**

220 space defined by the spatial extension of an activity

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

222 [SOURCE: ISO 12006-2:2020, 3.1.9]

223

224

225 3.8

226 **construction complex**

227 aggregate of one or more construction entities intended to serve at least one function or user
228 activity

229 Note 1 to entry: A construction complex can be analysed and the construction entities that go to make it up,
230 can be identified; e.g. an airport typically is composed of the construction entities runway, control tower, terminal
231 building, aircraft hangar, etc. A business park typically is composed of a number of buildings, access roads and
232 landscaping (each a construction entity in its own right). A motorway from A to B typically is composed of service
233 stations, the motorway pavement, bridges, embankments, landscaping, etc.

234 3.9 [SOURCE: ISO 12006-2:2020, 3.4.1] **construction entity**

235 independent unit of the built environment with a characteristic form and spatial structure,
236 intended to serve at least one function or user activity

237 Note 1 to entry: A construction entity is the basic unit of the built environment. It is recognizable as a physically
238 independent construction even though a number of construction entities might be seen as parts of a particular
239 construction complex. Ancillary works such as access roads, landscaping, service connections, may be regarded as

part of a construction entity. Conversely, when ancillary works are of sufficient scale they may be regarded as construction entities in their own right.

[SOURCE: ISO 12006-2:2020, 3.4.2]

3.10

infrastructure

system of facilities, equipment and services needed for the operation of an organization

4 [SOURCE: ISO 9000:2015, 3.5.2]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 a combination of 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 81346-1:2022, 4.9 and Table 1. 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 object occurrence is classified by its stable inherent function; 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 a complex 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.

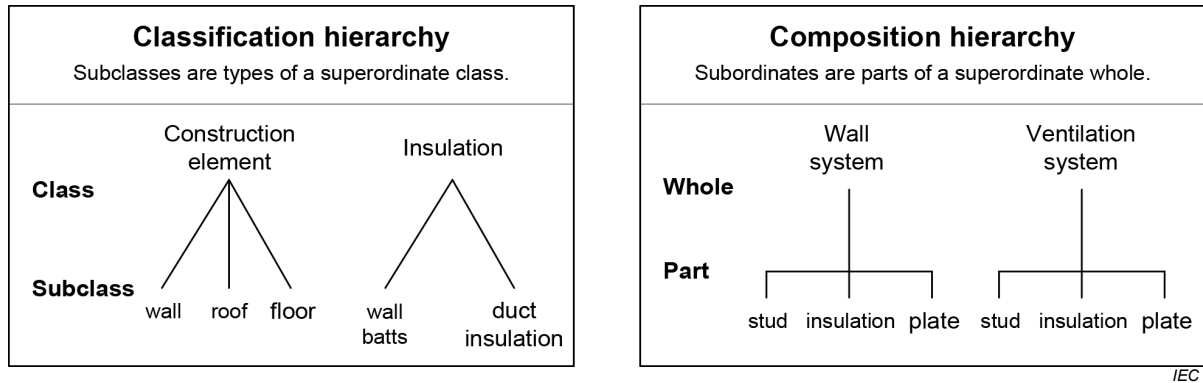


Figure 1 – Illustration of a classification hierarchy and a composition hierarchy

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;
- construction complexes, see Clause 7.1;
- construction entities, see Clause 7.2;
- infrastructure objects, see Clause 8.

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 or low-voltage, 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.

In Table 2 and Table 3, classes that are considered to be obsolete, i.e., classes that no longer should be used, are indicated using a grey scale font.

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</i> for picking up information and providing a representation	sensing object		Kind of quantity
	BA	<i>sensing object</i> for electric potential	electric potential sensing object	coupling capacitor, measuring voltage relay, measuring voltage transformer, voltage relay, voltage transformer	Kind of output signal
	BB	<i>sensing object</i> for resistivity or conductivity	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</i> for electric current	electric current sensing object	electronic overload relay, measuring current relay, measuring current transformer, overload relay	Kind of output signal
	BD	<i>sensing object</i> for density	density sensing object	aerometer, density sensor, density switch, density transformer, hydrometer	Kind of output signal
	BE	<i>sensing object</i> for field	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</i> for flow	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

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	BG	<i>sensing object</i> of spatial dimension or position	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</i> for energy	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</i> for power	power sensing object	kW meter, power limit switch, power meter	Kind of output signal
	BK	<i>sensing object</i> for time	time sensing object	Clock, time counter, time information device, time sensor, timer switch	Kind of output signal
	BL	<i>sensing object</i> for level	level sensing object	level sensor, level switch, level transmitter, liquid level sensor, liquid level switch	Kind of output signal
	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

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	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
	BX	<i>sensing object</i> of sound or visual appearance	audio-visual sensing object	alarm microphone, acoustic detector, acoustic sensor, acoustic survey device, camera, CCTV, face recognition device, fingerprint reader, glass breakage detector, image sensor, image detector, iris reader, microphone, profile control, PTZ camera, scanner, video camera	Kind of output signal
	BY	<i>sensing object</i> 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	<i>sensing object</i> for incidents or amounts	incident sensing object	counter, matter detector, person detector, presence detector, threshold counter	Kind of incidents or amounts sensed

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
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	capacitor	Kind of method applied
	CB	<i>storing object</i> for electric energy within an electromagnetic field	inductive storing object	inductor	Kind of method applied
	CC	<i>storing object</i> for electric energy within an electrochemical substance	electrochemical storing object	rechargeable battery	Kind of method applied
	CF	<i>storing object</i> for information	information storing object	information storing media, seat	Kind of method applied
	CL	<i>storing object</i> 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	<i>storing object</i> for matters within a stationary closed enclosure	enclosed stationary storing object	cabinet, cupboard, tank, silo, stationary tank,	Kind of matters stored
	CN	<i>storing object</i> for matters or persons within a moveable closed enclosure	moveable storing object	container, drum, elevator bucket, excavator bucket, gas cylinder, lift car, moveable tank	Kind of matters stored
	CP	<i>storing object</i> of thermal energy	thermal energy storing object	calorifier, crystalline tank, gas tank, hot water tank, liquid tank, thermal fluids tank, thermal matter tank	Kind of thermal energy
	CQ	<i>storing object</i> of mechanical energy	mechanical energy storing object	counterweight, elevated mass, flywheel, rubber band, spring	Kind of mechanical energy
E		<i>object</i> for emitting	emitting object		Kind of object being emitted and kind of energy source
	EA	<i>emitting object</i> of light	light emitting object	argon lamp, electro luminescent devices, electric lamp, fluorescent lamp, fluorescent tube, gas lamp, lamp, lamp bulb, laser, liquid lamp, neon lamp, paraffin lamp	Kind of energy source
	EB	<i>emitting object</i> of heat provided by electric energy	electric heating object	arc heating object, electric arc furnace, electric boiler, electric heater, 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</i> of coldness provided by electric energy	electric cooling object	air cooler, compression chiller, electric cold air blower, electric cooling surface	Kind of method

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	EE	<i>emitting object</i> of wireless power	wireless power object	capacitive coupler, gamma ray source, inductive power antenna, magnetron, maser, microwave oven, X-ray source	Kind of method
	EG	<i>emitting object</i> of heat and coldness provided by transfer of thermal energy	thermal energy transfer object	absorption chiller, adsorption chiller, cooling machine, freezer, fridge, heat exchanger, heat pump, Peltier element, plate heat exchanger, refrigerated container, refrigerator, reversible heat pump, spiral heat exchanger, tubular heat exchanger	Kind of method
	EM	<i>emitting object</i> of heat provided by combustion	combustion heating object	burner, combustion boiler, flare, steam generator, stove	Kind of object heated
	EP	<i>emitting object</i> providing heating by thermal energy	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</i> providing cooling by thermal energy	thermal cooling object	, cold air blower, cooler, cooling coil, cooling panel, cooling pipe, cooling surface, cooling tower, cooling tube, evaporator, spray cooler	Kind of method
	ET	<i>emitting object</i> of heat provided by nuclear fission	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</i> of sub-atomic particles	particle emitting object	alpha-ray device, beta-ray device, neutron-ray device, particle generator, plasma generator	Kind of method
	EV	<i>emitting object</i> of acoustic waves	acoustic wave emitting object	anti-noise loudspeaker, sonar	Kind of method
F		<i>object</i> for protecting against the effects of dangerous or undesirable conditions	protecting object		Kind of source or kind of effect
	FA	<i>protecting object</i> related to overvoltages	overvoltage protecting object	limiter, spark gap surge arrester, surge absorber, varistor surge arrester, zener diode	Kind of method applied
	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

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	FE	<i>protecting object</i> related to electric 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 possible cause for activation
	FN	<i>protecting object</i> related to mechanical force	mechanical force protecting object	airbag, cable protection, cushion, impact protection, rubber padding, 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	glacis, 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
	FT	<i>protecting object for persons against bodily harm</i>	body protection object	boots, ear cap, ear muff, earplugs, gasmask, gloves, headgear, helmet, jacket, overalls, protection glasses, pants, protection suit, shoes, trousers, visor,	Kind of object to be protected
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
	GB	<i>generating object</i> of electric energy powered by chemical reaction	chemical to electrical energy generating object	battery, electric battery, fuel cell	Kind of source method applied
	GC	<i>generating object</i> of electric energy from solar energy	solar to electrical energy generating object	crystalline photovoltaic module, solar cell, thin film photovoltaic module	Kind of method applied

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	GF	<i>generating object</i> of signals for carrier of information	signal generating object	electromagnetic wave transmitter, laser transmitter, radio-wave transmitter, signal generator, television station	Kind of source distribution method
	GL	<i>generating object</i> continuously of solid matter	continuous transport object	belt conveyer, chain conveyer, conveyor belt, escalator, lift screw, paternoster, roller conveyer, screw conveyer, shovel, snow blower, snow thrower, vibrating conveyer	Direction and size of matters
	GM	<i>generating object</i> discontinuously of solid matter	discontinuous transfer object	car, cart, crane, elevator, forklift truck, hoist, lorry, luggage turntable, palletizer, railway turntable, stacker, truck, train truck, turntable, vibrating feeder, wagon, wheelbarrow	Kind of method applied
	GP	<i>generating object</i> of liquid	liquid flow generating object	axial flow circulation pump, centrifugal pump, eductor pump, hydra., hydraulic ram pump, impeller, liquid velocity pump, lubricator, oiler, peristaltic pump, piston pump, positive displacement pump, pump, radial-flow circulation pump, rotary gear pump, screw pump, siphon	Kind of method applied
	GQ	<i>generating object</i> of gas	gaseous flow generating object	air curtain, blower, closed propeller fan, gas compressor, gas ejector, leaf blower, mechanical fan, open propeller fan, propeller, squirrel cage fan, vacuum pump, ventilator	Kind of flow generating method
	GR	<i>generating object</i> of thermal energy from solar energy	solar to thermal energy generating object	flatbed solar panel, solar panel, solar tower	Kind of method applied
H		<i>object</i> for treating matter	matter processing object		Kind of method applied
	HJ	<i>matter processing object</i> by primary forming	primary forming object	3D-printer, casting tool, chipboard press, press, sintering press	Kind of initial material state
	HK	<i>matter processing object</i> for surface treatment	surface treatment object	air gun sprayer, anodizer, burnishing machine, dishwasher, electrostatic coating machine, hammer peening machine, Hoover, oil-coating machine, polisher, polishing machine, sand paper, shower, steam cleaner, surface cleaning object, surface coating object, surface modification object, , ultrasonic degreaser, vacuum cleaner, 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, sieve, 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, scrubber	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	air injector, carburettor, humidifier, kneader, mixer	Kind of method applied
	HX	<i>matter processing object</i> providing new material by chemical or biological reaction	reacting object	catalyst, chemical reactor, fermenter, gasifier	Kind of method applied
K		<i>object</i> for treating input signals and providing an appropriate output	information processing object		Kind of signal

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	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
	KF	<i>information processing object</i> for relaying electric signals	electric signal relaying object	coupler, electric network bridge, electrical network switch, repeater, relay, time relay	Kind of functionality
	KG	<i>Information processing object</i> of optical signals	optical signalling object	optical network switch, optical repeater, optical router	Kind of functionality
	KH	<i>information processing object</i> of fluid signals	fluid signalling object	fluid controller, pilot valve	Kind of purpose
	KJ	<i>information processing object</i> of mechanical signals	mechanical signalling object	locking cylinder, key coded device, mechanical regulator	Kind of method
	KZ	<i>information processing object</i> of signals of multiple kinds	multiple kind signalling object	multiple kind switch	Kind of method
M		<i>object</i> for providing movement or mechanical 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	AC motor, asynchronous motor, DC motor, electric motor, induction motor, PM motor, servo-motor, stepper motor, synchronous motor	Kind of movement
	MB	<i>driving object</i> in the form of linear force, powered by electromagnetic force	electromagnetic linear driving object	actuator, electromagnet, linear motor, solenoid	Kind of method
	MC	<i>driving object</i> powered by magnetic force	magnetic force driving object	permanent magnet	Kind of method
	MD	<i>driving object</i> powered by piezoelectric force	piezoelectric driving object	piezoelectric actuator, piezoelectric motor	Kind of method
	ML	<i>driving object</i> powered by mechanical energy	mechanical energy driving object	elastic energy drive, gravity energy drive, hammer, nail gun, roller coaster, spring actuator device, steam turbine, water turbine, wind turbine	Kind of mechanical source
	MM	<i>driving object</i> powered by fluid displacement or pressure	fluid powered driving object	hydraulic cylinder, hydraulic motor, pneumatic cylinder, pneumatic motor	Kind of fluid source

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	MS	<i>driving object</i> powered by combustion of fuels	combustion engine	detonation charge, Diesel cycle engine, explosive device, gas turbine, jet engine, liquid-propellant rocket, Otto cycle engine, ramjet engine, seatbelt pretensioner, solid-propellant rocket, Wankel engine	Kind of engine
	MT	<i>driving object</i> powered by an external heat source	heat engine	steam engine, Stirling engine	Kind of engine
N		<i>object</i> for enclosing partly or fully another object	covering object		Kind of method
	NA	<i>covering object</i> by filling an opening	infilling object	gasket, gland, grating, grout, pane, panel, sealing joint	Kind of purpose by the filling
	NB	<i>covering object</i> by closing an opening	closure object	blind gasket, cabinet door, cubicle door, cupboard door, door leaf, faceplate, fuel door, leaf, hatch cover, housing cover, inspection hatch, leaf of large door, plug, valve disc, window sash	Kind of object to close
	NC	<i>covering object</i> by finishing structures	finishing object	aircraft fairing, aircraft skin, belly fairing, car body panel, ceiling finish, cockpit fairing, flooring, furniture front, grass turf, motorcycle fairing plate, paving, plant mat, roofing, unstressed hull, wall covering, window board, window sill	Kind of object to protect
	ND	<i>covering object</i> of an edge or end	terminating object	bargeboard, carpet edge, ceiling edge, crown, curb, edge end, edge trim, fascia, fibre end, fibre termination, flaunching, lawn edge, plant bed edge, raised floor edge, tile edge, wall top	Kind of object to terminate
	NE	<i>covering object</i> by hiding joints and transitions	hiding object	architrave, base shoe, bushing, ceiling lining, capper strip, cover strip, eaves lead, flashing, reveal liner, ridge flashing, roof flashing, skirting board, wall corner lining	Kind of method and purpose
P		<i>object</i> 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	semaphore, signal lamp, traffic light	Kind of method and purpose

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	PG	<i>presenting object</i> in a visible form of a single scalar variable	scalar display	Ampere meter, angle indicator, audio spectrometer, barometer, caliber, 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, measuring tape, position indicator, pressure indicator, quantity meter, resistivity indicator, ruler, sight glass, temperature indicator, var-hour meter, varmeter, voltmeter, watt-hour meter, wattmeter	Quantity to be presented
	PH	<i>presenting object</i> 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	<i>presenting object</i> in audible form	acoustic device	bell, horn, loudspeaker	Kind of method
	PK	<i>presenting object</i> in tactile form	tactile device	braille text sign, free height warning, road grooves, tactile marking, vibrator	Kind of method
	PL	<i>presenting object</i> in an ornamental form	ornamental object	carpet, cornice, decorative textile, figure, frieze, picture, pilaster, stucco	Kind of method applied
	PZ	<i>presenting object</i> in multiple forms	multiple form presenting object	audio-visual alarm, interactive terminal, television set	Kind of method applied
Q		<i>object</i> for controlling access or flow	controlling object		Kind 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, high-voltage circuit breaker with isolation function, isolating circuit breaker, motor starter, solid state power transistor, thyristor, tube power transistor	Kind of switching method
	QB	<i>controlling object</i> by isolating electric circuits	electric isolating object	disconnecter, electronic disconnecter, fuse-switch disconnecter, fused disconnecter, fuseless disconnecter, load-switch disconnecter, switch-fuse disconnecter	Kind of method
	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, multi-phase shutoff valve, on-off damper, plug, steam shutoff valve	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

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	QP	<i>controlling object</i> of fluids in open environment	open flow controlling object	dam plate, liquid gate, lock gate, multi-phase control valve, nose strake, plug, rudder, steam regulation valve, stop log, strake, ventral strake, vortex generator, wing strake	Kind of method
	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
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 an electric current	Electric current 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
	RF	<i>restricting object</i> by stabilising a signal	signal stabilising object	ferrite, signal equaliser, signal filter	Kind of method
	RG	<i>restricting object</i> by restricting a return flow of electromagnetic radiation	radiation return flow restricting object	encapsulating foil, one-way mirror	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	matter return flow restricting object	check damper, flap, non-return valve, odour trap, smell trap, 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, exhaust air damper, fixed nozzle, jet stator, orifice plate, pump stator, regulating damper, regulation valve, shower, shower head, solids regulating valve, transmitted air damper, ventilation inlet, ventilation outlet, venturi nozzle	Kind of flow and method
	RP	<i>restricting object</i> by restricting a level limit	level restricting object	overflow system, static level restricting object, variable level restricting object, variable threshold	variable threshold

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	RQ	<i>restricting object</i> of the local environment	local climate stabilising object	absorbent, acoustic screen, airborne-sound insulation, brick lining, climate membrane, curtain, impact-noise insulation, insulation, duct insulation, geofabric, geotextile, louvered blind, material-separating fabric, material-separating layer, membrane, noise barrier, noise protection, pipe insulation, screen, screen wall, shutter, silencer, sound absorber, sound attenuator, sound baffle, sound insulation, weed control fabric, wind protection board	Kind of effect and method applied
	RU	<i>restricting object</i> by restricting access to an area	access restricting object	bar, bird mesh, bird spikes, bollard, entrance management gate machine, fence, gate machine, guide barrier, one-way door, rodent barrier, rat stop device, restricting shape, stock guard, ticket gate	Kind of method applied
S		object 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, joypad, operating panel	
		<i>object</i> for transforming	transforming object		Kind of object changed and kind of transformation
T	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

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	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
	TD	<i>transforming object</i> of electromagnetic energy between electric and magnetic form	electromagnetic transforming object	Rogowski coil, spiral coil, winding	Kind of method
	TF	<i>transforming object</i> of signal while maintaining or changing its form	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 while modifying its effect	mechanical energy transforming object	automatic gear, control coupling, indexing gear, gear, lever, speed convertor, torque converter	Kind of transformation
	TM	<i>transforming object</i> of matter by mass reduction	mass reduction object	angle grinder, blanking machine, boring machine, carpenter's plans, diabolal l'liers, drilling machine, electron discharge sawing machine, etching machine, gas cutting machine, grinder, honing machine, immersion chemical mill, jet machine, lathe, lawn mover, pick axe, piercing machine, plane, plasma arc cutting machine, punching machine, scissors, secaterurs, , spray chemical mill, thermal cutter, trimmer shearing machine, wire cutter	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
U		<i>object</i> for localising other objects	holding object		Kind of positioning

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	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, paper holder, pipe gland, rail clamp, rail fastener, rail gauge, stake, stair stringer, stringer, track gauge, vehicle stand, vise	Kind of object to be fixed
	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	cooker hood, cubicle, electrical enclosure, electric panel, outlet box, pattress box, plant soil, hose reel cubicle, safety cabinet, safety chamber, 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, footing, 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

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	UM	<i>holding object</i> by reinforcement	reinforcing object	concrete injection, concrete lining, concrete spurling, diagonal bonding, dry deep soil mixing, earth pressure embankment, horizontal rail, lime column, pavement reinforcement, rebar cage, rebar mesh, reinforcement bar, reinforcing mass layer, reinforcing matter, reinforcing mesh, reinforcing rod, security strike plate, soilcrete, 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, frame bar, 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, ball joint, bearing, cement, chemical joint, cylindrical joint, expansion joint, hinge, planer joint, prismatic joint, roller bearing, screw joint, sliding object, slot joint, sphere plant joint, Stewart platform, structural joint	Degree of freedom
	UQ	<i>holding object</i> by fastening	fastening object	anchor plate, bolt, bolt and nut, chemical bond, elastic fastening, expansion joint, movement joint, mounting bracket, nail, nipples, nut, pinchers, pliers, ratchet strap, rivet, weld seam	Kind of method
	UT	<i>holding object</i> by levelling	levelling object	excavation, filling, patterned ground	Kind of method
	UU	<i>holding object</i> by existing ground	existing ground	cohesive soil, filled material, friction soil, mixed soil, organic soil, rock	Kind of material
	UV	<i>holding object</i> by forming human body support	furniture	armchair, armrest, backrest, bed, bench, chair, chaise longue, couch, day bed, divan-bed, fauteuil, footrest, headrest, legrest, mattress, sofa, stool	Part of human body to support
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, signal cable	Kind of purpose

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	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 edge, drip flashing, 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, wire, worm screw	Kind of method
	WR	<i>guiding object for track bound objects</i>	rail object	rail track, track, track crossing	Kind of method
	WS	<i>guiding object for unbound self-driven moveable objects</i>	path object	foot walk, gangway, human pathway, road, robot route, vehicle pathway	Kind of movement source
	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 with multiple kinds of flows</i>	multiple flow guiding object	combined drainage pipe, umbilical, umbilical cable	Kind of method
	X	<i>object</i> for interfacing an object	interfacing object		Kind of object flowing and kind of method
	XB	<i>interfacing object</i> for high-voltage electric power	high-voltage connecting object	brush, clamp, cable head, high-voltage cable joint, high-voltage connector, high-voltage moveable connector, high-voltage socket, high-voltage terminal, high-voltage terminal box, junction box, pantograph,	Kind of method
	XD	<i>interfacing object</i> for low-voltage electric power	low-voltage connecting object	brush, distribution box, electric terminal, low-voltage cable joint, low-voltage moveable connector, low-voltage plug, low-voltage power socket, low-voltage terminal, pantograph, plug, plug adapter, power distributor, power outlet, socket, terminal box	Kind of method

Class code		Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2				
	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	flexible connection, hub, patch panel, signal distributor, signal socket, terminal	Kind of method
	XH	<i>interfacing object</i> of optical fibres	light connecting object	fibre box, 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, funnel, sink, toilet, urinal, WC	Kind of object collected
	XM	<i>interfacing object</i> for sealed material flow	sealed flow connecting object	fire hose coupler, glue fitting, hose coupler, hose fitting, hose flange, inspection chamber, pipe coupler, pipe fitting, pipe flange, press fitting, solder fitting, tube expansion joint, tube fitting, tube flange, water distributor	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, differential gear, 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, mechanical coupling, overrunning clutch, torque bit	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			<i>object</i> for picking up information and providing a representation	sensing object		Kind of quantity

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

Class code			Class definition	Class name (preferred term)	Examples of terms	Criteria for definition of subclasses
1	2	3				
		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 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	
		BGG	<i>physical dimension sensing object</i> of physical object	object scanner	2D-scanner, 3D-scanner, coordinates scanner, laser scanner	
	BH		<i>sensing object</i> for energy	energy sensing object		Kind of energy
		BHA	<i>energy sensing object</i> of flow with defined energy density	flow energy meter	energy cooling meter, energy meter, energy sensor, gas energy meter	
		BHB	<i>energy sensing object</i> of thermal flow with defined heat capacity	thermal energy meter	condensate sensor, energy cooling meter, energy meter, energy sensor	
		BHC	<i>energy sensing object</i> of electricity flow	electric energy meter	kWh sensor	
	BJ		<i>sensing object</i> for power	power sensing object		Kind of output signal
		BJA	<i>power sensing object</i> , with scalar output	power meter	kW meter	
		BJB	<i>power sensing object</i> , with Boolean output	power limit switch		
	BK		<i>sensing object</i> for time	time sensing object		Kind of output signal
		BKA	<i>time sensing object</i> , with scalar output	time sensor	clock, time information device	