
List of CEN standards to support the EPBD

Introduction

The standards are arranged by hierarchy, in accordance with annex A of CEN/TR 15615 (the "Umbrella Document"). This introduction describes the role of the standards in each section and is based on CEN/TR 15615 (the "Umbrella Document").

Section 1 – Standards concerned with calculation of overall energy use in buildings

Standards in this section provide a link between delivered energy and the energy performance indicators for buildings. Since a building generally uses more than one fuel (e.g. gas and electricity), the different energy sources are collected per energy carrier. The overall rating is based on a weighted sum of delivered energy carriers. The weightings can be related to, for instance, primary energy or CO₂ emissions, to provide the end result of the calculation of energy performance (Article 3 of the Directive).

EN 15603 defines the uses of energy to be taken into account and provides methods to assess energy performance energy ratings for new and existing buildings.

EN 15217 sets out ways of expressing the energy performance in a certificate (Article 7), and ways of expressing requirements as to the energy performance (Articles 4 to 6).

EN 15459 provides a calculation method for the economic issues of heating systems and other systems that are involved in the energy demand and energy consumption of the building.

Section 2 – Standards concerned with the calculation of delivered energy

Standards in this section provide the link between the building's energy needs and delivered energy for space heating and cooling, and also the energy requirements for ventilation, domestic hot water and lighting. The uses of energy are calculated separately:

- a) Space heating – EN 15316-1, EN 15316-2-1, EN 15316-2-3, the parts of EN 15316-4 (depending on the type of heating system), including losses and control aspects, and EN 15377 for embedded systems. The input to the calculation is the result from EN ISO 13790 (using either a simplified method or a dynamic simulation, see section 3).
- b) Space cooling – EN 15243, including losses and control aspects, and energy for dehumidification if applicable. The input to the calculation is the result from EN ISO 13790 (using either a simplified method or a dynamic simulation, see section 3).
- c) Domestic hot water – the parts of EN 15316-3, which include both the specification of domestic hot water requirements for different types of building, and the calculation of the energy needed to provide it.
- d) Ventilation – EN 15241, energy needed to supply and extract air, based on installed fan power and controls, including energy for humidification if applicable.
- e) Lighting – EN 15193, based on installed lighting power and annualised usage according to building type, occupancy and lighting controls.

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- f) Integrated building automation and controls – EN 15232, takes into account additional energy optimisation based on interdisciplinary control functions and applications for space heating, ventilation, cooling, domestic hot water and lighting.

All of these standards take into account renewable energy sources where appropriate.

Section 3 – Standards concerned with calculation of energy needs for heating and cooling

Standards in this section provide methods for the calculation of energy needs for heating and cooling.

EN ISO 13790 defines two routes for this:

- a) Simplified methods based on monthly or hourly calculations and simplified description of the building (in terms of element *U*-values, etc). The inputs to these calculations are obtained using the standards in Section 4.
- b) Detailed numerical calculations. The detailed calculation procedure is not specified in the standard. EN 15265 provides criteria that should be followed together with tests for the validation of computer software (although the tests cover only simple cases and do not include systems).

The choice of calculation method to be applied is to be made at national level. The choice may be determined by criteria such as reproducibility (for comparability and in case of legal requirements), accuracy (in appreciating the building and system provisions and/or specific conditions) and cost effectiveness (of gathering the input). These criteria may be conflicting. For that reason the choice will typically depend on the use of the building (residential, office, etc.), the complexity of the building and/or systems, and the application (e.g. regulatory requirements, energy certification, new buildings, existing buildings).

The rules given in EN ISO 13790 for the use of different calculation methods ensure compatibility and consistency between them. The standard provides, for instance, common rules for the boundary conditions and physical input data irrespective of the chosen calculation approach.

The calculations take account of control aspects that affect the heat gains and losses of the building, such as control of internal temperature, ventilation and solar protection.

Section 4 – Supporting standards

These standards provide the input data for the calculation of energy needs by the methods in Section 3.

Section 4A Thermal performance of building components

Section 4A includes standards for the calculation of the thermal performance of building components. The overall transmission heat loss coefficient is obtained by EN ISO 13789, which refers to other standards for the calculation of *U*-values. The standards for *U*-values fall into two groups:

- a) simplified methods (EN ISO 6946, EN ISO 13370, EN ISO 10077-1, EN 13947), which can be used for components within the scope of those standards; and
- b) detailed methods (EN ISO 10211, EN ISO 10077-2), which can be used as an alternative, or for cases for which there is not an applicable simplified method.

The *U*-value of components, including windows and doors, can alternatively be established by measurement according to test methods cited in an applicable product standard.

Thermal bridges (at junctions between elements, etc) are covered in EN ISO 10211 and EN ISO 14683.

The standards in this group also include those for obtaining thermal values of building materials (EN ISO 10456).

Section 4B Ventilation and air infiltration

Section 4B includes standards for assessing ventilation and air flow rates. EN 15242 provides methods for calculation of air flow rates to enable the calculation of heat losses due to air exchange. EN 13779 covers mechanically ventilated buildings (including those with air conditioning).

Section 4C Overheating and solar protection

Section 4C includes standards for estimating internal temperatures without air-conditioning, and for calculating the effect of solar protection devices. These calculations can be used to determine whether there is a need to consider air conditioning.

Section 4D Indoor conditions and external climate

Section 4D includes standards related to indoor conditions (EN 15251) and specifications for the calculation and presentation of climatic data (EN ISO 15927).

Note The parts of EN ISO 15927 do not actually contain climatic data, but rather a specification for such data, so that data in conformance with this standard are determined and established on a consistent basis and a uniform format.

Section 4E Definitions and terminology

Section 4E includes EN ISO 7345, EN ISO 9288, EN ISO 9251 and EN 12792, which contain definitions of terms and quantities used by other standards.

Section 5 – Standards concerned with monitoring and verification of energy performance

These standards include the determination of air leakage rates and infra-red thermography, which can be used in the verification of the energy performance of buildings.

Also included are standards on inspection of heating systems and air conditioning systems, which relate to Articles 8 and 9 of the Directive.

List of EPBD related CEN and CEN-ISO standards

The standards with the number in **blue font** are part of the Mandate M343 from the European Commission to CEN.

GENERAL
TR 15615 Explanation of the general relationship between various European standards and the Energy Performance of Buildings Directive (EPBD) - Umbrella document. CONTENT: This technical report describes the European standards (ENs) that are intended to support the EPBD by providing the calculation methods and associated material to obtain the overall energy performance of a building. In Annex A the standards concerned are arranged in a hierarchical fashion. The content of the individual standards is summarised in Annex B. Annex C provides a list of definitions, and Annex D a list of principal symbols, that are used consistently in the standards.
Section 1 - Standards concerned with calculation of overall energy use in buildings (based on results from standards in section 2)
EN 15217 (June 2007) Energy performance of buildings — Methods for expressing energy performance and for energy certification of buildings CONTENT: Defines: <ul style="list-style-type: none">a) Global indicators to express the energy performance of whole buildings, including heating, ventilation, air conditioning, domestic hot water and lighting systems. This includes the different possible indicators as well as a method to normalize themb) Ways to express energy requirements for the design of new buildings or renovation of existing buildingsc) Procedures to define reference values and benchmarkd) Ways to design energy certification schemes
EN 15603 (Jan. 2008) Energy performance of buildings — Overall energy use and definition of energy ratings CONTENT: This standard specifies a general framework for the assessment of overall energy use of a building, and the calculation of energy ratings in terms of primary energy, CO ₂ emissions or parameters defined by national energy policy. Separate standards calculate the energy use of services within a building (heating, cooling, hot water, ventilation, lighting) and produce results that are used here in combination to show overall energy use. This assessment is not limited to the building alone, but takes into account the wider environmental impact of the energy supply chain.
EN 15459 (Nov. 2007) Economic evaluation procedures for energy systems in buildings CONTENT: Provides data and calculation methods for economic issues of heating systems and other systems that are involved in the energy demand and consumption of the building

Section 2 - Standards concerned with calculation of delivered energy (based where relevant on results from standards in section 3)**EN 15316-1 (July 2007)**

Heating systems in buildings — Method for calculation of system energy requirements and system efficiencies — Part 1: General

CONTENT: Standardises the required inputs, the outputs and the structure of the calculation method for system energy requirements. Energy performance may be assessed either by values of the system efficiencies or by values of the system losses due to inefficiencies. Based on an analysis of the following parts of a space heating and domestic hot water system:

- the emission system energy performance including control;
- the distribution system energy performance including control;
- the storage system energy performance including control;
- the generation system energy performance including control (e.g. boilers, solar panels, heat pumps, cogeneration units).

EN 15316-2.1 (July 2007)

Heating systems in buildings – Method for calculation of system energy requirements and system efficiencies – Part 2-1: Space heating emission systems

CONTENT: Energy performance may be assessed either by values of the heat emission system performance factor or by values of the heat emission system losses due to inefficiencies. Method is based on an analysis of the following characteristics of a space heat emission system including control:

- non-uniform space temperature distribution;
- emitters embedded in the building structure;
- control of the indoor temperature

EN 15316-4 (July 2007 – Nov. 2008)

Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies –

CONTENT: Provides methods for system efficiencies and/or losses and auxiliary energy. Consists of seven parts:

EN 15316-4.1 Space heating generation — Combustion systems (boilers)

EN 15316-4.2 Space heating generation — Heat pump systems

EN 15316-4.3 Heat generation systems, thermal solar systems.

EN 15316-4.4 Heat generation systems, building-integrated cogeneration systems.

EN 15316-4.5 Space heating generation systems, the performance and quality of district heating and large volume systems.

EN 15316-4.6 Heat generation systems, photovoltaic systems

EN 15316-4.7 Space heating generation — Biomass combustion systems

EN 15316-2.3 (July 2007)

Heating systems in buildings — Method for calculation of system energy requirements and system efficiencies — Part 2-3: Space heating distribution systems.

CONTENT: Provides a methodology to calculate/estimate the heat emission of water based distribution systems for heating and the auxiliary demand as well as the recoverable heat emission and auxiliary demand.

EN 15316-3 (Oct. 2007)

Heating systems in buildings — Method for calculation of system energy requirements and system efficiencies — Domestic hot water systems

CONTENT: Calculation of energy requirements for domestic hot water heating systems including control, for all building types. In three parts:

EN 15316-3.1 Domestic hot water systems, characterisation of needs (tapping-patterns).

EN 15316-3.2 Domestic hot water systems, distribution.

EN 15316-3.3 Domestic hot water systems, generation.

EN 15243 (Aug. 2007)

Calculation of room temperatures and of load and energy for buildings with room conditioning systems

CONTENT: Defines procedures to calculate temperatures, sensible loads and energy demands for rooms; latent room cooling and heating load, the building heating, cooling, humidification and dehumidification loads and the system heating, cooling, humidification and dehumidification loads.

Gives general hourly calculation method, and simplified methods.

EN 15377 (2005 – Oct. 2007)

Design of embedded water based surface heating and cooling systems in 3 parts:

CONTENT: Applies to water based surface heating and cooling systems in residential, commercial and industrial buildings, for systems integrated into the wall, floor or ceiling construction without any open air gaps. In three parts:

EN 15377-1 Determination of the design heating and cooling capacity (2005)

EN 15377-2 Design, dimensioning and installation

EN 15377-3 Optimising for use of renewable energy sources (Oct. 2007)

EN 15241 (May 2007)

Ventilation for buildings — Calculation methods for energy losses due to ventilation and infiltration in commercial buildings

CONTENT: Describes method to calculate the energy impact of ventilation systems (including airing) in buildings to be used for applications such as energy calculations, heat and cooling load calculation. Its purpose is to define how to calculate the characteristics (temperature, humidity) of the air entering the building, and the corresponding energy required for its treatment as the auxiliary electrical energy required.

EN 15232 (July 2007)

Energy performance of buildings Impact of building automation, controls and building management.

CONTENT: Defines and specifies the performance of standardised energy saving and optimisation functions and routines of Building Automation and Control Systems (BACS) and Technical Building Management (TBM) systems and services. Summarises the methodologies to calculate/estimate the energy demand for heating, ventilation, cooling, hot water and lighting of buildings and expresses the results of energy saving and efficiency in buildings by the application of the different BACS energy saving functions.

EN 15193 (Sept. 2007)

Energy performance of buildings — Energy requirements for lighting

CONTENT: Specifies the calculation methodology for the evaluation of the amount of energy used for lighting in the building and provides the numeric indicator for lighting energy requirements used for certification purposes. Also provides a methodology for the calculation of dynamic lighting energy use for the estimation of the total energy performance of the building.

Section 3 - Standards concerned with calculation of energy need for heating and cooling

EN-ISO13790 (March 2008)

Energy performance of buildings — Calculation of energy use for space heating and cooling

CONTENT: Gives calculation methods for assessment of the annual energy use for space heating and cooling of a residential or a non-residential building, or a part of it. Includes the calculation of heat transfer by transmission and ventilation of the building when heated or cooled to constant internal temperature; the contribution of internal and solar heat sources to the building heat balance; the annual energy needs for heating and cooling; the annual energy required by the heating and cooling systems of the building for space heating and cooling; the additional annual energy required by a ventilation system. Building can have several zones with different set-point temperatures, and can have intermittent heating and cooling. Calculation period is one month or one hour or (for residential buildings) the heating or cooling season. Provides common rules for the boundary conditions and physical input data irrespective of the chosen calculation approach.

EN 15255 (Aug. 2007)

Thermal performance of buildings — Sensible room cooling load calculation — General criteria and validation procedures

CONTENT: Sets out the level of input and output data, and prescribes the boundary conditions required for a calculation method of the sensible cooling load of a single room under constant or/and floating temperature taking into account the limit of the peak cooling load of the system. It includes a classification scheme of the calculation method and the criteria to be met by a calculation method in order to comply with this standard. Purpose is to validate calculation methods used to evaluate the maximum cooling load for equipment selection and HVAC system design; evaluate the temperature profile when the cooling capacity of the system is reduced; provide data for evaluation of the optimum possibilities for load reduction; allow analysis of partial loads as required for system design, operation and control.

EN 15265 (Aug. 2007)

Thermal performance of buildings — Calculation of energy needs for space heating and cooling systems using dynamic methods — General criteria and validation procedures

CONTENT: Specifies the assumptions, boundary conditions and validation tests for a calculation procedure for the annual energy use for space heating and cooling of a building (or of a part of it) where the calculations are done on an hourly basis. Does not impose any specific numerical technique. Purpose of this standard is to validate calculation methods used to describe the energy performance of each room of a building; provide energy data to be used as interface with system performance analysis (HVAC, lighting, domestic hot water, etc).

Section 4A - Standards to support the above - Thermal performance of building components**EN-ISO 13789 (Dec. 2007)**

Thermal performance of buildings — Transmission and ventilation heat transfer coefficients — Calculation method

CONTENT: Specifies method and provides conventions for the calculation of the steady-state transmission and ventilation heat transfer coefficients of whole buildings and parts of buildings. Applicable both to heat loss (internal temperature higher than external temperature) and to heat gain (internal temperature lower than external temperature).

EN ISO 13786 (Dec. 2007)

Thermal performance of building components — Dynamic thermal characteristics — Calculation methods

CONTENT: Specifies the characteristics related to dynamic thermal behaviour of building components and gives methods for their calculation

EN-ISO 6946 (Dec. 2007)

Building components and building elements — Thermal resistance and thermal transmittance — Calculation method

CONTENT: Method of calculation of the thermal resistance and thermal transmittance of building components and building elements, excluding doors, windows and other glazed units, components which involve heat transfer to the ground, and components through which air is designed to permeate.

EN-ISO 13370 (Dec. 2007)

Thermal performance of buildings — Heat transfer via the ground — Calculation methods

CONTENT: Gives methods of calculation of heat transfer coefficients and heat flow rates, for building elements in thermal contact with the ground, including slab-on-ground floors, suspended floors and basements. It applies to building elements, or parts of them, below a horizontal plane in the bounding walls of the building. Includes calculation of the steady-state part of the heat transfer (the annual average rate of heat flow), and the part due to annual periodic variations in temperature (the seasonal variations of the heat flow rate about the annual average).

EN 13947

Thermal performance of curtain walling — Calculation of thermal transmittance

CONTENT: Methods for calculating the thermal transmittance of curtain walls consisting of glazed and/or opaque panels fitted in, or connected to, frames. Detailed and simplified methods. Includes different types of glazing, frames of any material, different types of opaque panels clad with metal, glass, ceramics or any other material, thermal bridge effects at the rebate or joint between the glazed area, the frame area and the panel area.

EN-ISO10077-1 (Sept. 2006)

Thermal transmittance of windows, doors and shutters – Calculation of thermal transmittance - General

CONTENT: Specifies methods for the calculation of the thermal transmittance of windows and pedestrian doors consisting of glazed and/or opaque panels fitted in a frame, with and without shutters. Allows for different types of glazing, opaque panels, various types of frames, and where appropriate the additional thermal resistance for closed shutters.

EN-ISO10077-2

Thermal transmittance of windows, doors and shutters – Calculation of thermal transmittance – Numerical method for frames

CONTENT: Specifies a method and gives the material data required for the calculation of the thermal transmittance of vertical frame profiles, and the linear thermal transmittance. Can also be used to evaluate the thermal resistance of shutter profiles and the thermal characteristics of roller shutter boxes.

EN-ISO 10211 (Dec. 2007)

Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations

CONTENT: Sets out the specifications for a 3-D and 2-D geometrical model of a thermal bridge for the numerical calculation of heat flows and surface temperatures. Specifications include the geometrical boundaries and subdivisions of the model, the thermal boundary conditions and the thermal values and relationships to be used.

EN-ISO 14683 (Dec. 2007)

Thermal bridges in building construction — Linear thermal transmittance — Simplified methods and default values

CONTENT: Deals with simplified methods for determining heat flows through linear thermal bridges which occur at junctions of building elements. Specifies requirements relating to thermal bridge catalogues and manual calculation methods. Provides default values of linear thermal transmittance.

EN-ISO 10456 (Dec. 2007)

Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values

CONTENT: This standard specifies methods for the determination of declared and design thermal values for thermally homogeneous building materials and products, together with procedures to

convert values obtained under one set of conditions to those valid for another set of conditions. These procedures are valid for design ambient temperatures between -30°C and +60°C.

It gives conversion coefficients for temperature and for moisture. These coefficients are valid for mean temperatures between 0°C and 30°C.

It also gives design data in tabular form for use in heat and moisture transfer calculations, for thermally homogeneous materials and products commonly used in building construction.

Section 4B - Standards to support the above - Ventilation and air infiltration

[EN 15242 \(May 2007\)](#)

Ventilation for buildings — Calculation methods for the determination of air flow rates in buildings including infiltration

CONTENT: Describes method to calculate the ventilation air flow rates for buildings to be used for applications such as energy calculations, heat and cooling load calculation, summer comfort and indoor air quality evaluation. Applies to mechanically ventilated buildings; passive ducts; hybrid systems switching between mechanical and natural modes; window opening by manual operation for airing or summer comfort issues.

[EN 13779 \(April 2007\)](#)

Ventilation for non residential buildings — Performance requirements for ventilation and room conditioning systems

CONTENT: Gives performance requirements for ventilation systems. Applies to the design of ventilation and room conditioning systems for non-residential buildings subject to human occupancy, excluding applications like industrial processes.(Applications for residential ventilation are dealt with in EN 14788.)

Section 4C - Standards to support the above - Overheating and solar protection

[EN-ISO 13791 \(2004\)](#)

Thermal performance of buildings — Calculation of internal temperatures of a room in summer without mechanical cooling — General criteria and validation procedures.

CONTENT: Specifies the assumptions, boundary conditions, equations and validation tests for a calculation procedure, under transient hourly conditions, of the internal temperatures (air and operative) during the warm period, of a single room without any cooling/heating equipment in operation. No specific numerical techniques are imposed by this standard. Validation tests are included.

[EN-ISO 13792 \(2005\)](#)

Thermal performance of buildings — Calculation of internal temperatures of a room in summer without mechanical cooling — Simplified methods

CONTENT: Specifies the required input data for simplified calculation methods for determining the maximum, average and minimum daily values of the operative temperature of a room in the warm period, to define the characteristics of a room in order to avoid overheating in summer at the design stage, or to define whether the installation of a cooling system is necessary. Gives criteria to be met by a calculation method in order to satisfy the standard

EN 13363-1+A1

Solar protection devices combined with glazing — Calculation of solar and light transmittance — Part 1: Simplified method

CONTENT: Specifies a simplified method based on the thermal transmittance and total solar energy transmittance of the glazing and on the light transmittance and reflectance of the solar protection device to estimate the total solar energy transmittance of a solar protection device combined with glazing.

Applicable to all types of solar protection devices parallel to the glazing. Venetian or louvre blinds are assumed to be adjusted so that there is no direct solar penetration.

EN 13363-2

Solar protection devices combined with glazing — Calculation of total solar energy transmittance and light transmittance — Part 2: Detailed calculation method

CONTENT: Specifies a detailed method, based on the spectral transmission data of the materials, comprising the solar protection devices and the glazing, to determine the total solar energy transmittance and other relevant solar-optical data of the combination. Valid for all types of solar protection devices parallel to the glazing. Ventilation of the blind is allowed for in each of these positions in determining the solar energy absorbed by the glazing or blind components, for vertical orientation of the glazing.

Section 4D - Standards to support the above - Indoor conditions and external climate**CR 1752**

Ventilation for buildings — Design criteria for the indoor environment

CONTENT: Specifies the requirements for, and the methods for expressing the quality of the indoor environment for the design, commissioning, operation and control of ventilation and air-conditioning systems. Covers indoor environments where the major concern is the human occupation, but excludes dwellings and buildings where industrial processes or similar operations requiring special conditions are undertaken.

EN 15251 (May 2007)

Indoor Environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality thermal environment, lighting and acoustics

CONTENT: Specifies the parameters of impact and/or criteria for indoor environment and how to establish indoor environmental input parameters for the building system design and energy performance calculations. Also specifies methods for long term evaluation of the obtained indoor environment as a result of calculations or measurements. Applicable mainly in the non-industrial buildings where the criteria for indoor environment are set by human occupancy and where the production or process does not have a major impact on indoor environment.

EN ISO 15927-1

Hygrothermal performance of buildings — Calculation and presentation of climatic data — Part 1: Monthly means of single meteorological elements (ISO 15927-1:2003)

CONTENT: Specifies procedures for calculating and presenting the monthly means of those parameters of climatic data needed to assess some aspects of the thermal and moisture performance of buildings. Covers air temperature; atmospheric humidity wind speed; precipitation; solar radiation; long wave radiation.

EN ISO 15927-2

Hygrothermal performance of buildings — Calculation and presentation of climatic data s — Part 2: Hourly data for design cooling load (ISO 15927-2:2009)

CONTENT: Gives the definition and specifies methods of calculation and presentation of the monthly external design climate to be used in determining the design cooling load of buildings.

EN ISO 15927-3

Hygrothermal performance of buildings — Calculation and presentation of climatic data — Part 3: Calculation of a driving rain index for vertical surfaces from hourly wind and rain data (ISO 15927-3:2009)

CONTENT: Specifies a procedure for analysing hourly rainfall and wind data derived from meteorological observations so as to provide an estimate of the quantity of water likely to impact on a wall of any given orientation, taking account of topography, local sheltering and the type of building and wall.

EN ISO 15927-4

Hygrothermal performance of buildings — Calculation and presentation of climatic data — Part 4: Hourly data for assessing the annual energy use for heating and cooling (ISO 15927-4:2005)

CONTENT: Specifies a method for constructing a reference year of hourly values of appropriate meteorological data suitable for assessing the average annual energy for heating and cooling.

EN ISO 15927-5

Hygrothermal performance of buildings — Calculation and presentation of climatic data — Part 5: Data for design heat load for space heating (ISO 15927-5:2004)

CONTENT: Specifies the definition, method of calculation and method of presentation of the climatic data to be used in determining the design heat load for space heating in buildings, including the winter external design air temperatures, and the relevant wind speed and direction, where appropriate.

EN ISO 15927-6

Hygrothermal performance of buildings — Calculation and presentation of climatic data — Part 6: Accumulated temperature differences (degree days) (ISO 15927-6:2007)

CONTENT: Specifies the definition, method of computation and method of presentation of data on accumulated temperature differences, used for assessing the energy used for space heating in buildings.

Section 4E - Standards to support the above - Definitions and terminology

EN ISO 7345

Thermal insulation — Physical quantities and definitions (ISO 7345:1987)

CONTENT: Defines physical quantities used in the field of thermal insulation, and gives the corresponding symbols and units.

EN ISO 9288

Thermal insulation — Heat transfer by radiation — Physical quantities and definitions (ISO 9288:1989)

CONTENT: Defines physical quantities and other terms in the field of thermal insulation relating to heat transfer by radiation.

EN ISO 9251

Thermal insulation — Heat transfer conditions and properties of materials — □Vocabulary (ISO 9251:1987)

CONTENT: Defines terms used in the field of thermal insulation to describe heat transfer conditions and properties of materials.

EN 12792

Ventilation for buildings — Symbols, terminology and graphical symbols

CONTENT: Comprises the symbols and terminology included in the European standards covering 'Ventilation for buildings' produced by CEN/TC 156.

Section 5 - Standards concerned with monitoring and verification of energy performance

EN 12599

Ventilation for buildings — Test procedures and measuring methods for handing over installed ventilation and air conditioning systems

CONTENT: Specifies checks, test methods and measuring instruments in order to verify the fitness for purpose of the installed systems at the stage of handing over. Offers choice between simple test methods and extensive measurements.

Applies to mechanically operated ventilation and air conditioning systems as specified in EN 12792 and comprising any of the following:

- Air terminal devices and units
- Air handling units
- Air distribution systems (supply, extract, exhaust)
- Fire protection devices
- Automatic control devices.

Does not define the procedure by which the system is set, adjusted and balanced or the procedure for internal quality control checks before handing over.

EN 13829

Thermal performance of buildings — Determination of air permeability of buildings — Fan pressurization method (ISO 9972:1996, modified)

CONTENT: Measurement of the air permeability of buildings or parts of buildings in the field. It specifies the use of mechanical pressurization or depressurization of a building or part of a building. It describes the measurement of the resulting air flow rates over a range of indoor-outdoor static pressure differences.

EN ISO 12569

Thermal insulation in buildings — Determination of air change in buildings — Tracer gas dilution method (ISO 12569:2000)

CONTENT: Describes the use of tracer gas dilution for determining the air change in a single zone as induced by weather conditions or mechanical ventilation. Includes concentration decay, constant injection and constant concentration.

EN 13187

Thermal performance of buildings — Qualitative detection of thermal irregularities in building envelopes — Infrared method (ISO 6781:1983 modified)

CONTENT: Specifies a qualitative method, by thermographic examination, for detecting thermal irregularities in building envelopes. The method is used initially to identify wide variations in thermal properties, including air tightness, of the components constituting the external envelopes of buildings. The results have to be interpreted and assessed by persons who are specially trained for this purpose.

EN 15378 (Sept. 2007)

Heating systems in buildings — Inspection of boilers and heating systems

CONTENT: Specifies inspection procedures and optional measurement methods for the assessment of energy performance of existing boilers and heating systems. Includes boilers for heating, domestic hot water or both; and boilers fired by gas, liquid or solid fuel (including biomass). Also includes heat distribution network, including associated components and controls; heat emitters, including accessories; and space heating control system.

EN 15239 (May 2007)

Ventilation for buildings — Energy performance of buildings — Guidelines for the inspection of ventilation systems

CONTENT: Gives methodology for the inspection of mechanical and natural ventilation systems in relation to its energy consumption. Applicable to all buildings. Purpose is to assess functioning and impact on energy consumption. Includes recommendations on possible system improvements

EN 15240 (April 2007)

Ventilation for buildings — Energy performance of buildings — Guidelines for the inspection of air-conditioning systems

CONTENT: Describes the common methodology for inspection of air conditioning systems in buildings for space cooling and or heating from an energy consumption standpoint. The purpose is to assess the energy performance and proper sizing of the system, including: □conformity to the original and subsequent design modifications, actual requirements and the present state of the building; correct

system functioning; function and settings of various controls; function and fitting of the various components; power input and the resulting energy output
