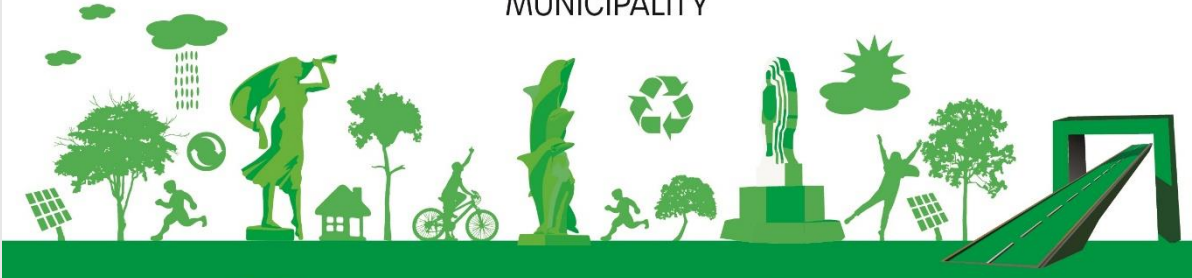
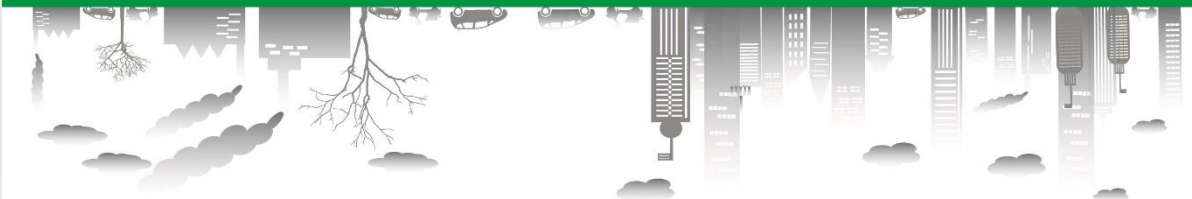


T.R. KARSIYAKA
MUNICIPALITY



GREEN



GREEN BUILDING GUIDE 2023

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T.R. KARŞIYAKA MUNICIPALITY

GREEN BUILDING - GREEN SITE - GREEN BUSINESS GUIDE

CHAPTER ONE

Objective, Basis, Preface and Definitions

ARTICLE 1

OBJECTIVE

1. In the 2021 Sustainable Energy and Climate Action Plan, Karşıyaka Municipality aims to reduce its greenhouse gas emissions from 3.96 tCO₂e/person in 2018 to 2.37 tCO₂e/person in 2030. In line with this target, 32 mitigation and adaptation actions were identified on the basis of sectors. Improvements to be made within the scope of this guide are directly and indirectly related to 14 actions. Our main goal is to reach our SECAP targets with this application.
2. With this directive, it is aimed to ensure energy efficiency, protection of water resources, green infrastructure applications, reduction of wastes going to landfill and recycling for buildings, sites and businesses within our district. In addition, it is aimed to reduce our carbon footprint by reducing the greenhouse gas emissions of our district through the widespread use of materials with a long life cycle and to transform into a city that is resistant to climate change and has a high adaptability.
3. This guide, which includes the principles of Green Building - Green Site, aims to reduce the greenhouse gas emissions of our city and to increase the awareness and support the dissemination of national and international certification requirements, while including many environmentally friendly practices to be resilient and flexible to the climate crisis.

ARTICLE 2

BASIS

1. This directive has been prepared based on Article 14, subparagraph (a), and Article 77 of the Municipal Law No. 5393, Karşıyaka Municipality Sustainable Energy and Climate Action Plan approved by Karşıyaka Municipality Assembly Decision No. 72458193/209 dated 01.09.2021, Karşıyaka Municipality Assembly Decision No. 72458193/250 dated 03.10.2022, and Karşıyaka Municipality Assembly Decision No. 45 dated 02.01.2023.

ARTICLE 3

PREFACE

The rapid depletion of energy and water resources together with the climate crisis, which is the common problem of our world, has led us to produce solutions for the efficient use and saving of resources. It has forced us to develop renewable energy sources and water saving methods and building standards that use them. Buildings have a 36 per cent share in global energy consumption and in Turkey, the share of the building sector in final energy consumption has reached 32.8 per cent, surpassing the industrial sector. Accordingly, it is responsible for 39 per cent of global CO₂ emissions. These figures indicate that rational, sustainable and integrated solutions should be produced instead of conventional methods in energy use in buildings. Likewise, water use should be managed in a more

controlled and rational way. Of all the water in our world, 97.5 per cent is salty water and 2.5 per cent is fresh water. 2/3 of the fresh water is in glaciers and consists of water that we cannot use today. Usable water reserves, which have a small share, are used in agricultural activities, industry and for the continuation of human life. Turkey is also a country suffering from water shortage and is on the way to becoming a water poor country. The climate crisis in our world and uncontrolled water consumption cause a decrease in potable water reserves. Water-saving methods are being developed to control potable water reserves.

One of the factors that will negatively affect the ecosystem is the production phase of building materials and serious energy consumption is also realised in the production process. In order to prevent the negative impact arising from the production process, options such as the selection of recyclable and environmentally friendly materials are being developed. It has become important to develop a waste management system by separating and transforming wastes that cause negative impacts such as global warming, air pollution and groundwater pollution.

One of the most important consequences of climate change is the increase in the number and scale of climate-related natural disasters worldwide. Methods should be developed and measures should be taken to minimise the damage caused by disasters such as earthquakes, floods, landslides, storms, tornadoes and fires in settlements. Green infrastructure applications should be implemented in residential areas and buildings in order to improve urban ecology, to break the climatic climate effect, to reduce sudden floods by retaining rainwater, to prevent the destruction of green areas by constructions, to create a natural environment to breathe, to popularise vertical garden-green roof applications and to increase the quality of heat and sound insulation in buildings.

The spatial development of Karşıyaka has historically taken place in the north and west directions starting from the coastal line, especially from the Shipyard area. Karşıyaka, which was used as a resort by the people in the early 1800s, was included in the municipal boundaries in 1930 with the increasing population and gained district status in 1954. Its institutionalisation as an independent municipality took place in 1984.

After the earthquake on 30 October 2019, heavily damaged buildings have been demolished, and the demolition and renovation of medium damaged and slightly damaged buildings continues. In our district, which has an old and tired building stock, urban transformation works of the buildings identified as risky buildings are continuing rapidly. In this transformation process, our municipality aims to guide and solidarise with our citizens in the establishment of healthy, safe and efficient living spaces for existing and new constructions with this guide.

Our region is in the 1st Degree Earthquake Zone. The high probability of loss of life and property should not make us forget the fact that our house and building should be resistant to the earthquake of the expected intensity. We should have earthquake resistance information, especially before the ecosystem-sensitive revision of our existing building.

As of 2022, there are 25156 licensed buildings within the borders of Karşıyaka District. Only 4310 of these buildings were licensed after 2008 and have an energy identity certificate. There are nearly 120 housing estates and 7492 commercial enterprises. We hope that our guide will be useful in the economic and environmental revisions of buildings, sites and businesses in our district or in the construction of new constructions.

This guide includes studies to reduce our carbon footprint by reducing our greenhouse gas emissions through energy efficiency and the use of renewable energy sources, to ensure more effective and efficient use of our rapidly depleting resources in buildings, to protect our ecosystem, to reduce the urban heat island effect, to create healthy, comfortable and safe living spaces. For this purpose, improvement suggestions have been determined under 11 headings for new and existing Buildings, Sites and Enterprises.

Our 2021 Sustainable Energy and Climate Action Plan, which includes many of the greenhouse gas mitigation and adaptation actions together, is the basis of our participatory management approach to achieve the 2030 targets of our district with the sensitivity and support of our citizens.

ARTICLE 4

DEFINITIONS

Smart Home System: Smart detectors/sensors, sockets/switches, thermostats, security cameras, speakers, lighting, heating-cooling-ventilation-humidification, irrigation systems, systems where other technological devices are used in harmony with each other, etc.

Acoustic Performance Class: Indicates the rating system (A, the highest performance; F, the lowest performance), which can be expressed as A, B, C, D, E or F (A, the highest performance; F, the lowest performance), which is revealed by the evaluation made for an independent unit or the whole building depending on the internal noise levels, insulation values of building elements, internal noise levels from installation and service equipment and reverberation times in buildings and independent units within them.

Packaging Waste: All types of packaging and packaging components that meet the definition of waste in the Waste Management Regulation published in the Official Gazette dated 2/4/2015 and numbered 29314

Main Building: The building that is being assessed within the scope of the Guideline,

Waste: Any substance or material that is or must be discarded or released into the environment by its producer or the natural or legal person actually in possession of it,

Luminosity Level: The amount of light flow per unit area, i.e. the amount of light power that people can perceive with their eyes,

Luminosity Uniformity: The ratio of the minimum illuminance level realised in the working plane to the average illuminance level,

BEP-TR: The software programme used for the issuance of energy identity certificates and accessed from the ministry's internet address,

Building: A building containing only residential, commercial, or commercial+residential uses, which is covered, accessible to people, and used for human habitation, work, recreation, or worship, and suitable for the protection of animals and property,

Building Height: The height of the building from the elevation point to the eaves level,

Individual Heating: Heating the independent section with the heating energy obtained from a heat generation source placed inside the independent section,

Deposition Equipment: Piggy banks, containers and similar equipment where wastes are accumulated according to their types,

Primary Energy Consumption: The total consumption of the energy obtained from solid, liquid or gaseous fuels and the energy consumed by the end user in his building or independent section together with the energy consumed during the generation and distribution of the electrical energy consumed,

Bio-degradable waste: Biodegradable park and garden wastes and food and kitchen wastes from homes, offices, restaurants, outlets, canteens, food preparation and food processing facilities

Biological Origin Product: Product composed of materials of biological origin, renewable agricultural materials or forest products

Building Management System: Controlling, monitoring and reporting of buildings, heating-cooling-ventilation-air conditioning, lighting control, energy distribution management, meter monitoring, billing, alarm monitoring and all kinds of equipment from a single centre

Roof Garden: The roof of the building, which is designed as an open-air living space and can contain elements such as plants, covers, urban reinforcements

CO2 Emission: Equivalent amount of CO2 (carbon dioxide) emitted to the atmosphere depending on the final energy consumption of the building and the type of fuel used

Environment Licence: The licence regulated in the Regulation on Permits and Licences Required to be Obtained by the Environmental Law published in the Official Gazette dated 29/4/2009 and numbered 27214,

Environmental Product Declaration: Document providing information about the environmental impact of products

Drainage: A system consisting of a drainage layer, drainage pipes, control and maintenance manholes, which is applied to reduce the groundwater level and to ensure that the water accumulated in the ground is removed from the structure,

Energy Identity Certificate: As a minimum, a document containing information on the energy requirement and energy consumption classification of the building, insulation properties and efficiency of heating and/or cooling systems

FSC (Forest Stewardship Council) : FSC is an accreditation given to forest managers or manufacturing companies that follow sustainable methods of responsible forest management and the production of certified wood materials.

Recycling: Subjecting waste materials to the production process for primary or other use, except for energy recovery by incineration

Recovery: Recycling of waste materials into production processes as raw materials after various physical and chemical processes are applied,

Grey Water: The part of domestic wastewater from sinks, showers and bathtubs that does not contain septic tank.

Solar Control Element: Motionless or movable elements that can be placed inside or outside the window to allow the sun and sky light entering through the windows to be controlled into the volume,

Heat Pump: A device that allows the energy available at low temperature in soil, air and water to be transmitted into the building for heating and/or cooling,

Cogeneration: Simultaneous production of heat and electricity and/or mechanical energy in the same plant

Residence: A place where one or many people reside for the purpose of shelter, rest and sleep outside of work time, regardless of commercial purposes, and which is reserved for this purpose in the zoning plan

Compost: The material produced by decomposing organic-based wastes in oxygen or oxygen-free environment,

Chain of Custody (CoC): A certification system that tracks forest products from certified forests to the consumer,

Existing Building: The building whose construction has been completed before the date of application to the Guideline and has received a certificate of occupancy,

Central Heating System: A system that provides heating of more than one independent section with the heating energy obtained from a centre,

Central Cooling System: A system that provides cooling of more than one independent section with the cooling energy obtained from a centre,

Central Sanitary Hot Water System: A system that provides the distribution and use of sanitary hot water obtained from a centre to buildings and independent sections,

Final Energy Consumption: The total consumption of energy derived from solid, liquid or gaseous fuels and electrical energy by the end user in his building or independent section,

Nearly Zero Energy Building: A building that has high energy performance and at the same time has a certain amount of renewable energy utilisation,

Reference Building: For new buildings, as determined by the Communiqué on the National Calculation Method for Energy Performance in Buildings (Communiqué No: MHG/2017-26),

For existing buildings, the existing condition of the building before the improvement,

Zero Waste Certificate: The document, the qualifications of which are determined by the Ministry, to be given to local administrations that establish zero waste management systems and other places defined in Annex-1 list and to those who establish zero waste management systems on a voluntary basis,

Zero Waste Management System: The management system established in a way to include all the processes of waste reduction, separate accumulation at source, temporary storage, separate collection, transport and processing, starting from the prevention of waste generation,

Site: Places built or to be built on one or more zoning parcels, according to a certain approved settlement plan, consisting of blocks connected to each other in terms of management, which may include common use areas and may be arranged in contiguous, separate or block layout,

Sustainability Report : Global Reporting Initiative (GRI): An organisation that aims to measure the environmental, social and economic impacts of businesses in order to create a global sustainability system,

Commercial Enterprise: Independent sections or buildings related to shops, offices, offices, business houses, shopping centres, restaurants, restaurants, shops, markets, supermarkets, private education, private health and similar trade, gathering purposes and service sectors,

Rain Garden: Gardens created in not very deep pit areas where rainwater is directed directly without any treatment and on which plants grow,

Building Height: The total height of all constructed floors of the building, including basements, mezzanines and attic spaces,

Building Construction Area: Excluding skylights and courtyards, the area of all constructed floors of the building, including basement, mezzanine and roof spaces, roof or floor gardens, terraces on the roof, floor and ground, balconies, open overhangs and common areas in the building,

Certificate of Occupancy Permit: The approved document showing that the building has been completed in accordance with the projects attached to the licence, allowing the use of the building,

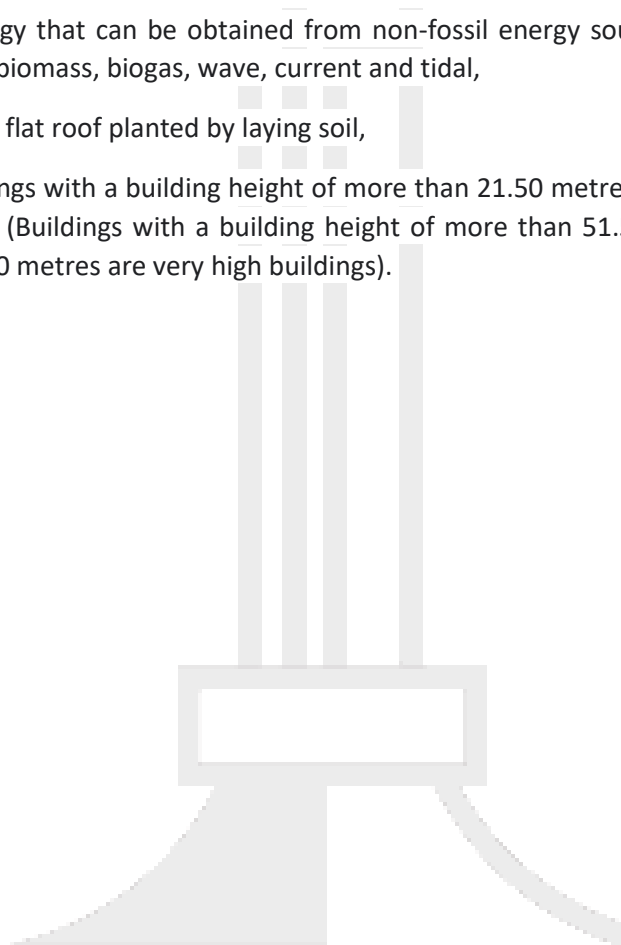
Building Licence: The approved official permit document issued by the relevant administration after the approval of the documents and projects determined by the Planned Areas Zoning Regulation on a parcel,

New Building: A new building or a building that has obtained a building licence and is under construction,

Renewable Energy: Energy that can be obtained from non-fossil energy sources such as hydraulic, wind, solar, geothermal, biomass, biogas, wave, current and tidal,

Green Roof: A sloping or flat roof planted by laying soil,

High-rise Building: Buildings with a building height of more than 21.50 metres or a building height of more than 30.50 metres (Buildings with a building height of more than 51.50 metres or a building height of more than 60.50 metres are very high buildings).



CHAPTER TWO

Application Principles

ARTICLE 5

AREAS FOR IMPROVEMENT

1-ENERGY USE AND PERFORMANCE

It is aimed to bring the energy efficiency in buildings to acceptable values by thermal insulation, to reduce greenhouse gas emission rates, to use renewable energy sources, to reduce fossil fuel consumption and to ensure the use of energy efficient devices for cooling.

1 (A) Fuel Consumption: For new buildings, in housing estates to be built in areas with natural gas infrastructure, it is obligatory to provide hot water/heating supply with combustion appliances with natural gas as fuel type, except for the central heating system, and to construct HAB/individual chimneys in kitchens, balconies or suitable areas of independent sections with residential use in accordance with the relevant standards and regulations. (Ref: 22, Ref: 7)

1) For existing buildings, we recommend that buildings with fuel type coal or liquid fuel convert their heating systems to natural gas, and buildings with central heating systems with fuel type coal or liquid fuel should have a water chimney system.

Table 1-1 Fuel Type CO2 Emission Conversion Coefficients (Ref:5)

	CO2 emission conversion coefficient (kg eCO ₂ /kWh)
Fuel-oil	0,330
Natural Gas	0,234
Gas (propan, metan, biogas)	0,277
Other fossil fuels	0,320
Lignite	0,433
Kok	0,467
Elektricity	*

* It is determined by the current versions of BEP-TR and published by the Ministry.

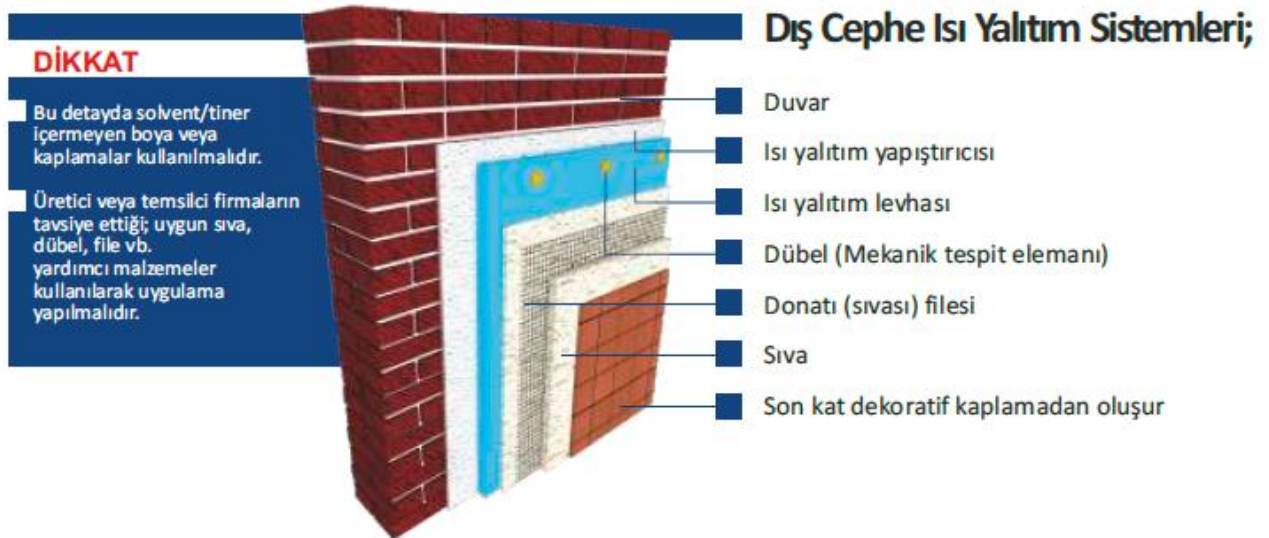
1 (B) Thermal Insulation and Sheathing

The way to significantly reduce energy consumption in residences and workplaces is through thermal insulation of our buildings. The walls, floors, balconies, balconies, consoles, floors, ceilings, roofs and window/wall joints forming the building envelope should be insulated in such a way that no thermal bridge is formed and continuity in insulation should be ensured.

Sheathing in existing buildings is a highly reliable, healthy, fire-resistant and significantly energy-saving thermal insulation system, as well as contributing to both sound and water insulation. Protects the building envelope against climatic conditions, prevents damage to the reinforcement and extends the life of the building. It protects thermal comfort, contributes to the reduction of carbon emissions by reducing fuel consumption spent in meeting heating-cooling needs. Conditions such as moulding, black staining, paint blistering / peeling as a result of sweating on interior surfaces do not occur on the walls made of sheathing.

In general, in existing buildings, we see that thermal insulation is applied only in the form of sheathing on the exterior of the building. However, insulation is a whole not only with the facade of the building but also with the roof/terrace, floors and windows. Since the efficiency expected from thermal insulation can be achieved without causing thermal bridges in the building, it is important to insulate unheated spaces such as garage-storage in the basement or ground floors, roof or terrace floors, installation pipes and ducts and door-window joinery. For this reason, in accordance with the relevant regulations and TS 825 Standard, it should be ensured that the Energy Identity Certificate of the building is created through the authorised institution after the completion of the application by making use of engineering services.

1 (B).1 Exterior Thermal Insulation Systems

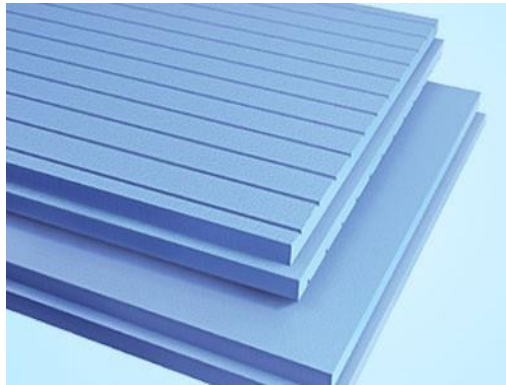


Thermal Insulation System Adhesive

It is a cement (mineral) based thermal insulation board adhesive mortar with organic polymer additive used for adhering thermal insulation boards to vertical or horizontal surfaces, applied with a trowel, produced according to TS 13566 and certified "G" individually or "CE" within the scope of package system.

a) Basic External Thermal Insulation Materials

Extruded Polystyrene Foam (XPS)



*It must be manufactured according to TS EN 13164 standard, have CE marking, and have a thickness calculated at least according to TS 825 calculation method.

*They can be produced in different densities ($\geq 25 \text{ kg/m}^3$), in sheet or tubular form.

*Thermal conductivity calculation value is $0,030-0,040 \text{ W/m.K}$. Water vapour diffusion resistance factor $\mu = 90-100$.

*Fire reaction class E.

b) Expanded Polystyrene Foam (EPS)



*In order for EPS boards to be used for thermal insulation purposes; It must be produced according to TS EN 13163 standard, have CE marking, have a thickness calculated according to at least TS 825 calculation method and have a density of at least 15 kg / m^3 .

*Thermal conductivity calculation value is $0,035 - 0,040 \text{ W/m.K}$. Water vapour diffusion resistance factor $\mu = 20-100$.

*Fire reaction class E.

c) Rock Wool and Glass Wool



*It must be manufactured according to TS EN 13162 standard, have CE marking, and have a thickness calculated at least according to TS 825 calculation method.

*They can be produced in mattress, sheet or pipe form with different coating materials in different densities (14-100 kg/m³).

*Thermal conductivity calculation value is 0,035-0,050 W/m.K. Water vapour diffusion resistance factor $\mu = 1$.

*It is a class A1 or A2 fireproof material.

d) Thermal Insulation Plates

*It has a thermal conductivity calculation value of 0,040-0,045 W/m.K.

* It is a class A fireproof material.

e) Exterior Thermal Insulation Plaster

It is applied and used for thermal insulation purposes on concrete and wooden surfaces, plastered surfaces, brick and gas concrete, painted surfaces, osb and betopan, eps plates. It is applied as internal and external thermal insulation in one or more layers. Water vapour diffusion resistance factor is $\mu = 5$.

f) Thermal Insulation System Dowel

Dowels are used for mounting thermal insulation plates on aerated concrete, concrete, brick, pumice etc. surfaces.

g) Thermal Insulation System Reinforcement (plaster) Mesh

Plaster mesh is used to meet the tensile stresses that will occur in the plaster coated on the thermal insulation boards and to prevent cracking.

h) Thermal Insulation System Plaster

The thermal insulation system plaster to be applied on the surface of thermal insulation boards should be cement or acrylic based, reinforced with polymeric additives, with a long processing time in wet state, resistant to freezing and thawing cycles after setting, prepared by mixing with water. Thermal insulation system plaster should be used on surfaces with high risk of cracking (moving structures such as wood, OSB and steel structures) according to the manufacturer's recommendation.

i) Corner Profiles

Alkali-resistant internal or external corner profile made of plastic or aluminium, with or without glass fibre plaster mesh reinforcement, to protect external corners on building corners and window edges from mechanical effects and to obtain smooth corners.

j) Dropper Profiles

It is a dropper profile made of plastic or aluminium, with or without plaster mesh reinforcement, which will ensure the removal of rain and similar water streams from building parts such as balconies, protrusions, etc. without damaging the building surface.

k) Water Base Profile

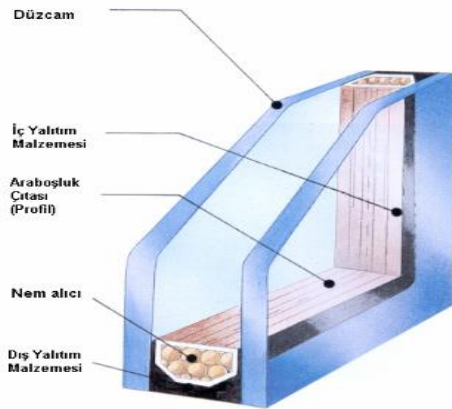
Reference profiles made of aluminium, which are mechanically fixed to the wall at the flood level. Proper fixing of the profile horizontally and vertically is of great importance for the healthy application of the entire system. When the thermal insulation boards are started to be placed, these profiles should be used as a gauge in order to ensure that the plates to be placed towards the upper floors are placed in the miter and in a smooth line.

I) Decorative Exterior Cladding (Topcoat)

Facade coating materials that are applied on the thermal insulation system plaster for protection of the system against external factors and decorative purposes in accordance with TS EN 15824 or TS EN 998-1, CE marked or G marked in accordance with TS 7847, cement based (prepared for use with water in powder form and need to be painted over), acrylic based, silicate based or additionally silicone added (ready to use in liquid form, coloured and can be repainted when necessary) should be used.

1 (B).2 Energy Efficiency in Windows, External Doors

Insulating glass is formed by joining two or more glass panes together under factory conditions to accommodate dry air or argon gas between them. The glass panes and aluminium spacer bead must be joined using an internal sealant (butyl/polyisobutylene) and an external sealant (polysulphide, polyurethane or silicone) must be applied to seal the insulating glass.



Insulation materials contain advantages and disadvantages in terms of their properties;

Mineral and vegetable fibre thermal insulation materials (glass wool, rock wool etc.), extruded polystyrene foam (XPS), expanded polystyrene foam (EPS) and thermal insulation plasters are widely used in thermal insulation of buildings.

Rock Wool; It is an advantageous product thanks to its superior properties. It is a material with good values especially in terms of flammability class, thermal conductivity value, water vapour diffusion resistance, sound insulation and service life, but its labour time and cost are higher than other materials.

XPS; It is a material with good values in terms of compressive strength, thermal conductivity value, water vapour diffusion resistance, but it is a material with a low flammability class.

EPS; It is a material with good values in terms of thermal conductivity value, water vapour diffusion resistance, but it is a material with low flammability class and generally low density value.

Thermal Insulation Plasters; In buildings where thermal insulation material is used, high insulation thicknesses will be required due to the low thermal conductivity value, which contributes to

insulation, but when it acts alone for thermal insulation, and the need for internal + external insulation in buildings will arise. Although its flammability value is in the A1 Fireproof Material class, its disadvantages are its short life span compared to other insulation materials and its ability to cause thermal bridges as a result of deterioration of its integrity due to external weather conditions and earthquakes.

For existing buildings that do not have an Energy Performance Certificate, at least Class C Energy Performance Certificate can be obtained from the approved institution by having the insulation and sheathing works done on the exterior facade and window-door detailed above.

With the amendment of the Energy Performance in Buildings Regulation for New Buildings on 13 February 2022 (Ref 23) ;

As of 1 January 2023, buildings that qualify as NSEBs must have an energy performance class of B or better in the Energy Performance Certificate and must also have a renewable energy use of at least 5% of the building's primary energy needs.

-Buildings with a total construction area of 5000 m2 or more must be constructed as NSEB.

As of 1 January 2025, buildings that qualify as NSEBs must have an energy performance class of B or better in the Energy Performance Certificate and at the same time have a renewable energy use of at least 10% of the building's primary energy needs.

Buildings with a total construction area of 2000 m2 or more must be constructed as NSEB.

1 (C) Energy Identity Certificate (EPC)

The energy performance class is determined by determining the annual energy consumption per m2 of the building, calculating the CO2 emission according to this value, comparing these values with reference building values, and placing the building in an energy class between A-G according to the comparison result. As a result of the process, an energy identity certificate is issued for the building.

Table 1-2 Energy Performance Classes

Energy Performance Class	Energy Performance Intervals
A	0-39
B	40-79
C	80-99
D	100-119
E	120-139
F	140-174
G	175-...

1) Except for the buildings designed and constructed as NSEB, although it is not compulsory for housing estates and residential buildings; it is recommended that the energy performance class of the Energy Performance Certificate is at least B for new buildings and buildings subject to the Regulation on Energy Performance in Buildings published in the Official Gazette dated 5/12/2008, and at least C class for existing buildings built before 5/12/2008.

1 (D) Cooling System

- 1) Central cooling system design is mandatory for commercial buildings with a total cooling demand greater than 250 kW (Ref:23), and it is recommended to design a central cooling system for commercial buildings, housing estates and residential buildings with a total cooling demand below 250 kW.
- 2) It is recommended that the cooling system energy efficiency class of all buildings should be at least A++++.(Ref:24)

1 (E) Domestic Hot Water System

- 1) It is compulsory for commercial buildings with a floor area of more than 2000 m² to design a central sanitary hot water system supported by solar energy (Ref: 23), and it is recommended to design a central sanitary hot water system supported by solar energy for commercial buildings, housing estates and residential buildings with a floor area of less than 2000 m².

1 (F) Use of Renewable Energies

It should be in our plans to invest in renewable energy sources that will meet the total amount of electrical energy consumed for heating, cooling, ventilation and lighting for existing and new buildings, sites and businesses without limitation of usage area.

It is also within the scope of the legislation in new buildings;

- System solutions such as the use of renewable energy sources, air, ground or water source heat pump, cogeneration and microcogeneration are analysed by the designers at the project design stage in order to fully or partially meet the heating, cooling, ventilation, sanitary hot water, electricity and lighting energy needs in all buildings with a usage area of more than 20,000 m² based on the building permit. It is recommended to make these applications in a way that at least 10% of the energy consumption cost of the building is covered.
- System solutions such as the use of renewable energy sources, air, ground or water source heat pump, cogeneration and microcogeneration are analysed by the designers in order to fully or partially meet the heating, cooling, ventilation, sanitary hot water, electricity and lighting energy needs for all buildings with a usage area of less than 20,000 m² based on the building permit. One or more of these applications should be based on meeting at least 50% of the total energy consumption cost of the building.

1 (G) Lightening

It is known that illumination or light is a very important sign of time for humans. Exposure to the wrong, untimely or insufficient amount of light can have negative effects on people's physical condition and mood, and can cause circadian rhythm disturbances. It also affects human performance, productivity and comfort. For these reasons, lighting systems with low energy consumption should be preferred as much as possible with the right lighting plans and luminaires in living and working environments.

LED bulbs are the most accessible and forefront applications among the most economical lighting technology that can be used in electrical energy consumption. A standard LED bulb can save about 70 per cent of electricity compared to a normal bulb. LED bulbs can also work about 10 per cent more efficiently than energy-saving bulbs. In addition, the service life of LED bulbs is longer and structurally more durable than standard bulbs. In a building; preferring LED lamps instead of using halogen, transparent or saving lamps will significantly reduce both the amount of electrical energy to

be consumed for lighting and the greenhouse gas emissions arising from the amount of electricity to be consumed.

1 (H) Elevators

Elevators contain equipment that cause energy consumption. (Ref:26, Ref:27) These are electric motor, lifting system, lighting and ventilation fans. In order to disseminate energy efficient elevators;

In elevators

- 1) Using a motor subject to "IE2" or higher energy efficiency class,
- 2) For buildings over 51.50 m building height with high travelling distance; recovery of braking energy with renewable (regenerative) drive in elevators with a capacity of 800 kg and above, with a speed of 1.6 m / s and above,
- 3) Use of energy efficient cabin lighting,
- 4) Use of energy efficient cabin ventilation fans,
- 5) Providing standby mode features that allow the car to automatically enter energy saving mode when the lift is not in use,

Recommended.

1 (I) Energy Efficient White Goods and Heating Appliances

The energy efficiency classification consists of seven groups, denoted by the letters A, B, C, D, E, F and G, based on the energy consumption of a device. For example, class A indicates the lowest energy consumption class and a refrigerator with energy efficiency class "A" consumes 23% less energy than a class B refrigerator, 45% less energy than a class "D" refrigerator and 56% less energy than a class "G" refrigerator. The use of high efficiency white goods is within the scope of solutions for reducing CO2 emissions, efficient use and saving of energy resources.

- 1) 1) In new buildings, the energy class of white goods such as washing machines, dishwashers, ovens and refrigerators should be "A". In existing buildings, inefficient and outdated appliances should be replaced with appliances with energy efficiency class "A".(Ref:28, Ref:29, Ref:30, Ref:31, Ref:32)
- 2) It is compulsory to use condensing type heating devices in independent sections or detached buildings in buildings using gas fuel with individual heating system with a usage area of 250 m2 and above (Ref: 23), and it is recommended to use condensing type heating devices in independent sections in buildings using gas fuel with individual heating system with a usage area of less than 250 m2.

1 (J) Recording of Energy Use

- 1) For the energy measurement monitoring system, it is recommended that the gas and energy consumption meters should be connected to the Building Management System, be traceable from the BMS and use meters suitable for remote reading system.
- 2) For all buildings where BMS is not installed; monitoring and recording of gas and energy consumption meters and declaration of consumption data for the last 1 year are mandatory.

2- WATER AND WATER WASTE MANAGEMENT

Water cycle and resources are the primary values that a city is obliged to protect. Water, stormwater and wastewater management can be successfully achieved by planning innovative, nature-based and green infrastructure techniques, preserving permeable surfaces and open spaces, slowing stormwater runoff and maximising infiltration through natural drainage solutions.

Recycled rainwater and grey water systems should have filtration systems to ensure that they are of a quality suitable for their intended use, samples should be taken at certain intervals for bacteria and pollution analysis, and grey water should be cleaned of solid wastes that may cause biological and/or chemical pollution.

2-(A) Water Saving

With this guide, it is aimed to use the water used in indoor and outdoor areas of buildings effectively and efficiently. Water savings between 30% and 70% can be achieved by equipping brands and types that ensure minimum water use in the selection of equipment, devices, as well as fittings and fixtures that provide water in the building / dwelling.

1) For all new buildings, in order to ensure water saving, it is compulsory to use faucets and mixers not exceeding 6 lt/min in sinks and sinks and 8 lt/min in showers.(Ref:56) For existing buildings, the reference values and improvement rates of the levels specified in the table below are specified.

Table 2.1 Indoor Luminaire and Fittings Consumption (Ref:36)

indoors fixtures and fittings	Reference	Level 1	Level 2	Level 3	Unit
WC	6	5	4	3	Effective reservoir volume (lt)
Washbasin	(*) 6/12	(*) 5/9	(*) 4/4,5	3	Volume (lt/min)
Shower	(*) 8/14	(*) 7/10	(*) 5/6	3,5	Volume (lt/min)
Bathroom	200	180	140	100	Volume (lt)
Urinal(2 or more)	7,5	6	1,5	0	Volume (lt/dish/hour)
Urinal (single)	10	8	2	0	Volume (lt/dish/hour)
Grey water / rainwater	0	0	25	50	Saving rate from network usage by using in toilet cisterns (%)
Kitchen sink	(*) 6/12	(*) 5/10	(*) 4/5	(*) 4/5	Volume (lt/min)
Kitchen sink: restaurant	(*) 6/10,3	(*) 5/9	(*) 4/7,3	(*) 4/6	Volume (lt/min)
Dishwasher	17	13	12	10	Volume (lt/rev)
Washing machine	90	60	40	30	Volume (lt/use)

(*) New / Existing building values.

2 (B) Water Quality, Leak Detection-Prevention and Recording of Water Use

- 1) In order to prevent water leaks / to take necessary measures, it is recommended that the water meters are connected to the Building Management System, are traceable from the Building Management System and use meters suitable for remote reading system.
- 2) It is recommended that periodic maintenance of water distribution lines in the building, especially water accumulation units such as tanks, should be carried out to ensure the quality of domestic water and information about these maintenance should be regularly recorded in the Building Management System.
- 3) For all buildings where a Building Management System is not installed, it is mandatory to monitor and record water use with appropriate meters, to carry out leakage controls and to use flow meters.

2 (C) Rainwater Harvesting, Treatment and Utilisation

Rainwater is considered as an alternative water source. Harvesting rainwater and using it for various purposes in buildings means saving network water. Therefore, this criterion aims to contribute to water saving.

- 1) For parcels over 1000 m²; it is obligatory to create a drainage system to be used in building toilet siphons, garden irrigation, car wash, fire installation and similar areas, to collect roof water in a cistern / rainwater tank to be installed and to ensure its reuse by treatment if necessary (Ref: 57) and it is recommended to install rainwater harvesting on parcels under 1000 m².

2 (D) Rainwater Collection and Discharge Systems in Buildings (Ref:40)

In the application of rainwater collection and discharge systems,

- It is essential that roof water down pipes and balcony water down pipes are separate in buildings.
 - Building balcony water downpipes are connected to the building waste water parcel chimney.
 - Separate building installations are made for waste water and rainwater (roof car park and garden / ground surface drainage waters) in buildings and collected in separate parcel chimneys.
- 1) The following points are taken into consideration when collecting waste water and rainwater in buildings.
 - Waste water and balcony stormwater downpipes are connected to the waste water network.
 - In areas where there is a rainwater network, rainwater is connected to the rainwater network or can be connected to the rainwater garden to be allocated in the garden or collected in the rainwater tank.
 - In areas where there is no rainwater network, rainwater can be connected to the rain garden to be established in the garden or collected in the rainwater collection tank.

2 (E) Waste Water Reuse (Grey Water)

After grey water is treated, it is used as an alternative water source. The use of this water source for various purposes in buildings means saving network water. Therefore, it is aimed to contribute to water saving with this criterion.

- 1) In new housing estates, high-rise buildings, urban transformation zones, educational buildings and shopping malls, it is compulsory to collect and treat grey water with a separate line and use it in toilet reservoirs, fire installations, laundry, garden irrigation, car washing and ornamental pools (Ref: 57), and it is recommended that buildings that are not within the scope of the obligation benefit from grey water.

2 (F) Water Insulation

It is aimed to take precautions against situations that pose a risk in terms of sustainability, health and use with factors such as corrosion and strength losses caused by exposure of structural elements in buildings to water or moisture in various ways.

- 1) In water tanks, it is essential that waterproofing materials in contact with drinking and utility water are made of materials that will not interact with water and will not impair the quality of water. Insulation materials cannot contain solvents and cannot be bitumen based.
- 2) Heat and water insulation against external influences is obligatory in all basement floors based on the ground. (Ref:58, Ref:59)
- 3) In buildings with basements with a building height exceeding 51.50 metres or with a covered usable area of more than 10,000 m² , waterproofing against the effect of pressurised water is obligatory under all circumstances (Ref: 59), and in buildings with basements with a building height below 51.50 metres or with a covered usable area of less than 10,000 m² , waterproofing against the effect of pressurised water is beneficial.
- 4) On horizontal surfaces exposed to pressurised water, it is essential to form the superficial insulation system with cover type materials.
- 5) Waterproofing materials to be used on vegetated roofs should be resistant to the roots of the plants used; materials to be used as root barriers should be resistant to root penetration.

In details where roof movements are intense, such as light metal roofs, carrier synthetic covers or elastomeric polymer bituminous covers are used.

3 - INDOOR ENVIRONMENT QUALITY

3 (A) Indoor Air Quality

It is aimed to provide healthy living spaces by keeping the amount of fresh air in the interior at appropriate values with natural or mechanical ventilation methods.

- 1) For commercial buildings and communal areas of sites, regardless of existing and new buildings, it is recommended that the supply of fresh air required for indoor ventilation is carried out by mechanical method and that sensors and related equipment capable of measuring the CO₂ level in the indoor environment are available.

3 (B) Ventilation and Air Conditioning Systems (Ref:65)

- 1) TS 3419 and related European Standards are complied with in the design of ventilation and air conditioning systems.

- 2) In buildings where there are people inside and it is foreseen to humidify the air blown in during the heating period, a control device that can adjust the absolute humidity of the blown air at a level of 10 grams or less for 1 kilogram of dry air, calibrated by an accredited institution, is used.
- 3) In buildings used for non-residential purposes;
 - a) The special mechanical ventilation system in a space is equipped with an automatic system to ensure the minimum indoor air quality of the space when there are no people in the space.
 - b) Room temperature regulators are used in air conditioning systems.
 - c) In air conditioning systems with variable air flow control on the basis of location, it is ensured that the fans connected to the system have variable flow rate.
- 4) Air conditioning systems are equipped with mechanical installations that will provide indoor air control to operate with variable air flow rate depending on the variable human load.
- 5) In the ventilation and air conditioning systems of new buildings with an air flow rate of 500 m³/h and above, heat recovery systems must be designed and heat recovery systems must be designed to have a minimum efficiency of 50% in summer and winter working conditions, and heat recovery systems must be built if it is advantageous considering the energy economy together with the initial investment and operating costs. These systems must have a by-pass arrangement for the transition seasons.
- 6) For new buildings to be constructed, the study specified in the fifth article must be submitted to the relevant administrations by the project author as a report during the design phase.
- 7) The criteria required to increase thermal comfort satisfaction and energy performance in buildings are determined according to EN 7730 and TS 2164 standards.
- 8) Leakage, thermal bridge and heat transfer coefficient of air handling units must comply with EN 1886 standard.
- 9) TS 5895 is complied with in the operation and maintenance of ventilation and air conditioning systems.
- 10) TS 3420 and related European Standards shall be complied with in the layout of ventilation and air conditioning systems.
- 11) Air duct leakage limits are determined and reported according to TS EN 1507 and TS EN 12237.
- 12) Filter systems used in air handling units are cleaned or replaced at the periods specified by the manufacturer and this situation is reported.
- 13) In case natural ventilation conditions cannot be provided, it is essential to install mechanical ventilation systems.

3 (C) Visual Comfort

It is of great importance to use adequate, safe and as much natural lighting as possible in indoor environments. There are elements that need to be taken into account in order to fulfil visual works in a fast, safe and comfortable manner. Within the scope of the main theme of visual comfort, it is aimed to address the criteria related to indoor visual comfort conditions during the design of natural lighting and artificial lighting systems during the project process.

Designing of lighting systems (Ref:70, Ref:71);

It includes the issues of ensuring the necessary illumination uniformity, providing the required glare values of artificial lighting systems, providing the required color rendering index value of artificial

lighting systems, ensuring adequate sunlight performance, ensuring adequate external visibility and ensuring sun control.

Providing solar control with fixed or mobile solar control elements that can be placed inside or outside the window to allow the sun and sky light entering through the windows to be taken into the volume in a controlled manner is an application that reduces energy consumption and increases heating and cooling efficiency.

3 (D) Sound Insulation

It is aimed to provide good hearing and perception conditions that will minimise the negative effects of noise originating from outside or inside the buildings, which people will be exposed to during the operation and use of all kinds of structures, buildings, facilities and enterprises used by people, on the peace and tranquility, physical and mental health of people..

Providing Airborne Sound Insulation in Exterior Building Elements

For housing estates and residential buildings, it is recommended to provide at least B class for new buildings and at least C class for existing buildings from Acoustic Performance Classes.

- 1) In commercial buildings, it is recommended to provide at least Class C of Acoustic Performance Class for new buildings and at least Class D for existing buildings.

3(E) Environmental Noise

For workplaces planned to be established in residential areas, the issues in the Environmental Noise Control Regulation (Ref: 76) regarding noise management shall be complied with at the licensing stage.

4- GREEN INFRASTRUCTURE APPLICATIONS

4 (A) Green Roof, Vertical Garden, Rain Garden and Other Landscape Applications

- 1) Green roof systems are mandatory for all new buildings with a total construction area over 60,000 m² in order to improve urban ecology, break the climatic climate effect, reduce sudden floods by retaining rainwater, prevent the destruction of green areas by construction, create a natural environment to breathe and provide heat and noise insulation on roofs, and (Ref:77) green roof systems are recommended for buildings with a total construction area under 60,000 m².

In all buildings with a total construction area of more than 30,000 m², green roof application is obligatory in case of terrace roofing. (Ref: 77)

- 2) In the green roof applications to be arranged in the common areas serving the building, at least 0.50 metres (for terrace roof) of soil filling should be created where grass, plants, flowers and small tree species will be grown, and water and heat insulation should be provided on the roof by calculating the soil load of the building carrier system.
- 3) Green facade system-vertical garden; can be created in two different types as potted flowers and planted walls. Plants in this system form green facades either by wrapping and climbing a modular cage panel or a cable and wire-rope network system. Passive air conditioning is

created by using vertical gardens in shell designs for buildings. Thanks to the vertical gardens used in shell designs, sun rays are absorbed by plants. At the same time, vertical garden systems also contribute to this heat insulation; the layers formed by the infrastructure systems used and the plant layer minimise heat transmission. The materials and plants used in vertical garden systems absorb heat. Therefore, vertical gardens used in the building envelope provide direct heat insulation on the surfaces where they are used.

- 4) It is obligatory to plant one tree for every 15 m² of the area outside the area where the building sits on the ground in the garden distances for new buildings to be valid for all building parcels. (Ref: 77), In new and existing buildings, one tree should be planted for every 10 m² of this area, the plant species to be planted should be selected from varieties that require little water according to local conditions and climatic conditions (Annex 1) and a drip irrigation system should be preferred.
- 5) The irrigation system in the parcel gardens should be designed in accordance with automatic drip irrigation, the use of the relevant control devices should be ensured and, if any, the water in the rainwater storage system should be used first. The issues specified in this section shall be taken into consideration in the landscape projects requested by the administrations.
- 6) For plant species to be used in green areas, species with low water consumption needs should be prioritised. Drought resistant plants with low water consumption are listed in (Annex 1, Ref:80). The issues specified in this section are taken into consideration in the landscape projects requested by the administrations.
- 7) Sudden and heavy rainfall causes flooding and flooding problems as a result of very little infiltration with the rapid removal of rainwater from the area. Rain gardens are areas where surface runoff is directed and arrangements are made with various plants and materials (stones, chips, etc.) according to the amount of rain. The most basic feature of the rain garden is to retain the excess precipitation that passes into the surface flow after the rain and to ensure that it is absorbed underground without causing erosion, flooding and water pollution. This has a positive impact on the supply of groundwater levels and thus on the water cycle.
- 8) For the car parking needs in the garden areas of the parcels, it is recommended to use water-permeable materials suitable for the green texture and to meet them in the rear and side gardens of the building by preserving the garden quality.
- 9) If the parcels are not suitable for tree planting, the number of trees calculated according to the conditions specified in Article 5 shall be planted in an area allocated for public use in the zoning plans that our Administration deems appropriate.

General studies on the urban heat island effect are more oriented towards changes in the atmospheric layer between the building height limit and the land surface. The surface material is effective in changing the land surface temperatures. Especially with irregular and unplanned urbanisation, the decrease in the green texture and the deterioration of its integrity cause damage to the cooling effect in terms of climate. Green spaces, including multiple ecosystems, play an important role in mitigating the urban heat island effect and thereby increasing urban resilience to climate change. It was determined that the surface temperature values were lower where there were more green areas, while the surface temperatures were higher where there was more construction.

We want to create natural environments for living, working and learning and to spread the principles of Biophilic Design, which is a design approach in which people connect with nature, in our district. On the way to becoming a biophilic city, we see daily contact with nature as an important element of urban life and we see the obligation to protect nature as a common habitat for all living things as an ethical responsibility. (Ref 79)

5-TRANSPORTATION

The gases released by the operation of widely used motor vehicles with fossil fuels are the biggest source of greenhouse gas emissions together with air pollution. Considering the magnitude of its role, it is important to reduce greenhouse gas emissions from transport in combating climate change.

It is aimed to reduce carbon emissions from transport by directing building users to low-emission transport preferences such as walking and cycling, shared electric vehicles or public transport for long distances instead of private motorised vehicles.

It is recommended that the number of car parks specified in the project should not exceed the number specified by the regulations. (Ref:81) However, if more car parks than the number specified by the regulations are to be allocated in case of need, low emission vehicle or electric vehicle car park including charging station shall be allocated as much as the excess number.

In car parks with a compulsory number of car parks of 10 or more, it is recommended to allocate an electric vehicle parking space for 10% of the number of car parks and to make arrangements suitable for electric vehicles, including charging stations.

Bicycle parking is compulsory. For every 5 car parking spaces, 1 bicycle parking space must be reserved.

It is recommended to plan 1 scooter parking space for every 5 vehicles.

6-WASTE MANAGEMENT

Waste Management is a form of management that includes the reduction of waste at its source, separation according to its characteristics, collection, temporary storage, interim storage, interim storage, recovery, transport, disposal and control after disposal and similar operations. The target is to reduce the amount of household waste sent to landfill (Ref: 83). Waste Management should be considered as Resource Management.

It is aimed at a waste management in which natural resources are used as little as possible and clean technologies are developed and managed in a way that will not harm or minimise harm to the environment during production, use or disposal stages.

With this guide, it is aimed that new and existing buildings gain climate and environmentally friendly features by applying Zero Waste Management, where waste management is separated at source according to the types of wastes, recycling and disposal methods are selected in accordance with the legislation in force.

Our building, site and business owner citizens who apply for certification deliver the packaging, old installation - equipment, joinery, glass, armature, lighting equipment and excavation wastes and hazardous wastes, which are carried out during the manufacturing and renovations in their new and existing buildings, to our municipality for recycling, recovery and disposal processes. Among these

wastes, those that are in working and usable condition can be used in secondary use and the wastes in the list specified in Annex 4 can be delivered to our 1st Class Waste Collection Centre.

As of 1 January 2023, housing estates with 300 or more dwellings, business centres with 20 or more office/office capacities, educational institutions and dormitories, health institutions, shopping malls, fuel stations and chain markets are obliged to adopt zero waste management system.(Ref:88)

It is recommended to establish a zero waste management system, create a waste area and provide the necessary equipment.

Separation of wastes at source is the most important pillar of waste management. Wastes generated in buildings should be separated according to their groups and accumulated separately in waste accumulation equipment located in the building and given to the municipal system and/or licensed companies.

6 (A) Waste Management Plan is a plan prepared based on the integration and certification of the conditions in which waste is reduced, recycling, recovery and disposal are provided for buildings, sites and businesses, with the municipality's Zero Waste Management System.

We can provide consultancy support for the preparation of the Waste Management Plan.

6 (B) Domestic wastes, packaging wastes (paper, cardboard, plastic, metal), waste vegetable oils, waste batteries, waste electrical and electronic devices and machines, furniture and wood wastes are organic wastes. (kitchen and garden landscape pruning and mowing waste collected for compost production). Domestic waste must be collected separately according to its groups and given to the municipality's collection system for recycling, recovery and disposal.

6 (C) THE NEIGHBOURHOOD CARD SYSTEM is a system that will be implemented throughout the district, starting from pilot neighbourhoods, where citizens are rewarded with a Visa card given to the woman of the house in the household in return for weighing and receiving the waste collected in their homes and workplaces.

7- LIGHT POLLUTION

7 (A) Light Pollution (Ref:90)

When it gets dark, people use lighting to see better, to live in a brighter environment, to work more easily, to feel safe, to advertise well in tourism and commercial areas. Unfortunately, in the world and in our country, very wrong lighting applications have been encountered recently. These applications are becoming widespread day by day. **Light pollution** is lighting at the wrong time, in the wrong place, in the wrong direction and in the wrong amount. (Ref:89)

Just as air pollution pollutes our air, water pollution pollutes our water, light pollution pollutes our enlightenment. If the light is used in the wrong place and more than necessary, it will be ineffective. Most of the energy used is wasted. When there is light pollution, a curtain is formed between the stars and people as a result of the light from the lighting used hitting substances such as dust in the sky. People looking at the sky in cities cannot see the stars decorating the sky due to the curtain formed. But when we go to the villages where there is no light pollution and look at the sky, we see how many stars there are. Because there is no curtain caused by misused lights in the villages.

7 (B) Sources of Light Pollution

Light pollution not only affects the visibility of stars. It also disrupts the balance that has been formed in the world over billions of years. Light pollution causes the balance in the world to deteriorate over time and causes abnormalities in humans and other living things.

Sources of light pollution;

- Excessive lighting for advertising purposes in tourism venues and holiday villages,
- Unnecessary lighting in sports fields, gardens and parks,
- In big cities, especially on the facades of huge buildings and overflowing lighting from buildings,
- Promotional advertising boards,
- Extra lights for security purposes,
- Misdirection and wrong selection of the lamps and luminaires used are among the causes of light pollution.

When the lighting is misdirected and overused, light overflow occurs. At the same time, it dazzles people's eyes, vertical and excessive amount of light occurs. This situation occurs because the people who design do not have enough knowledge and do not attach importance to light pollution.

7 (C) Light Pollution and Cost

Light pollution, which is a great burden on the economy, is caused by misdirected street lamps, street lighting, unnecessary and wasteful advertising. Those who fly over big cities such as Ankara, Istanbul, Antalya and Izmir can see the pollution with the naked eye. Generally, a very large amount of lighting is directed upwards, creating unnecessary pollution. Light must be used adequately for security, advertising or lighting. Illumination is essential for people. However, the light that escapes into space at night because it is not positioned correctly is a waste of energy.

Every wasted light means wasted energy, fuel resources, money and taxes. The more light that escapes into space at night, the more energy is lost. DMSP measures are used to calculate the cost of light escaping from the earth to space. Calculations made in our country show that the cost is very large. As light pollution increases, annual electricity consumption increases and thus heavy burdens are placed on both people and the economy of the state.

7 (D) What can be done against light pollution?

Every step taken to prevent light pollution is valuable. Directing the light as it should be to solve the problem and even trying to prevent losses is a big step. The most important thing to do to eliminate the light pollution problem is; to design lighting. When lighting is designed and people are made aware of light pollution, the problem will begin to solve itself.

8-DISASTER MANAGEMENT AND FIRE PREVENTION

One of the negative effects of the climate crisis is the increase in extraordinary weather events. Being prepared and resilient against the loss of life and property that our district, which is in the region of earthquakes and fires, floods, floods, will suffer in possible disasters is one of the important objectives of our Sustainable Energy and Climate Action Plan under the title of "Adaptation".(Ref:4)

It is aimed to take necessary precautions to minimise the damages that may occur in case of disaster, to improve disaster risk management and to construct new buildings prepared against disasters with the measures to be taken in case of construction in areas under disaster risk.

Our region is in the 1st Degree Earthquake Zone. The high probability of loss of life and property should not make us forget the fact that our house and building should be resistant to the earthquake of the expected intensity. Especially before the ecosystem-sensitive revision of our existing building, we should have earthquake resistance information.

8 (A) Determination of Necessary Measures Against Disasters

A report on disaster countermeasures should be prepared and the report should include the following topics:

Measures to minimise damage from disasters such as earthquakes, floods, landslides, avalanches, storms, cyclones and hurricanes, large fires, as well as earthquakes, floods and floods should be specified.

Historical and current analyses should be made on the geological structure of the selected land and structural standard values of the areas with high earthquake risk should be determined. The ratio of public open spaces, which are escape points for possible earthquake situations, to closed areas should be measured.

Flood and flood level of the land should be determined. Protection of the water permeability of the land and measures should be taken for these. In order to determine the flood risk of the project land, the flood and flood events breakdown of the flood risk maps for the last 50 years should be obtained from State Water Works and municipalities where there is a zoning plan; from the governorship where there is no zoning plan, or according to the identification data, the project land should be located in an area with low flood risk.

In order to prevent the building and the land from becoming an island in case of floods, the building entrance and the access roads of the land must be built at least 6 m above the calculated flood water level.(Ref:120). This requirement applies even if no changes are made to the impervious surface area on the project site or if permeable materials are used in the car park, access roads and landscaping areas, and even if the building is constructed in accordance with building regulations and zoning plans.

Measures should be taken to minimise the damage caused by disasters such as earthquakes, floods, landslides, storms and cyclones, fires. Disaster risk report and management plan should be prepared.

8 (B) Taking Necessary Measures Against Disasters

Regulation on buildings to be constructed in earthquake zones (Ref:91) requirements must be fulfilled. Emergency gathering areas should be determined.

Preference should be given to locations with low risk of flooding and inundation, the water permeability of the land should be protected and measures should be taken for these. Measures such as the use of permeable materials in car parks, access roads and landscaping areas, green roof applications, rainwater storage should be taken.

In recent years, the causes of sudden floods, which have increased especially in cities, are primarily the construction in the water beds and the increase in the amount of impermeable surface in the cities. By encouraging the orientation of construction to areas with low flood risk, flood control will be achieved to a great extent.

The decrease in permeable surfaces causes rainwater to form surface runoff without being able to pass into the soil and causes floods. Surface runoff causes pollution in the rivers it reaches and causes additional burden for wastewater treatment plants when it reaches the sewerage.

It is necessary to ensure that access roads are elevated to prevent buildings and building plots from being cut off from communication with transport systems in possible flood situations. Thus, it will

prevent the building users from being deprived of basic needs such as health services in flood situations.

8 (C) Fire Prevention

It aims to eliminate the fire risk of all kinds of structures, buildings, facilities and enterprises and to protect the building and the life safety of the people in it with the measures that can be taken in case of possible fire. Natural resources, trees and forests lost in fire, biodiversity in its content and combustion gases released into the atmosphere during fire have negative effects on climate change. Its contribution to global warming is one of the main reasons why fire disaster is included in our guide.

8 (C-1) Taking Measures in Accordance with Legislation

Construction and layout of the building, access roads to the building, building structural system stability, fire compartments, walls, floors, facades and roofs, building materials to be used in the building, escape routes, escape stairs, fire safety hall, building sections and facilities (boiler rooms, fuel tanks, kitchens, tea stoves, stoves, chimneys, shelters, car parks, roofs), lifts, lightning protection installation, transformers, generators, electrical installations and systems, emergency lighting and guidance, fire detection and warning systems, periodic tests, maintenance and inspection, smoke control systems, pressurisation system, fire extinguishing systems, fire pumps, fire extinguishing installation, storage and use of hazardous materials, fire safety responsibility, teams, training, inspection items must be provided in accordance with the requirements of the regulation on fire protection of buildings. (Ref:97)

8 (C-2) Taking Additional Measures

Additional measures that are not mandatory under the Regulation on Fire Protection of Buildings but improve protection are listed below.

Additional Measures;

- 1- Using rock wool material in building exterior wall, floor and roof thermal insulation,
- 2- Establishment of a fire management plan covering the building and its immediate surroundings,
- 3- The use of manual fire warning buttons in non-residential buildings with more than two floors and residential buildings that are not within the scope of high-rise buildings,
- 4- Installation of automatic fire detection devices in buildings,
- 5- Use of electrical materials that are free from halogen and do not produce any toxic gases when exposed to fire,
- 6- Smoke control system in common areas such as halls and corridors of buildings with a building height below 51.50 m,
- 7- Pressurisation of escape stairs under the height of 30.50 m in all buildings, except residential buildings,
- 8- Mechanical smoke evacuation system in boiler rooms with a total area of less than 2000 m², closed car park areas and warehouses in basements,
- 9- Pressurisation of escape stairs in residential buildings with a building height below 51.50 m,
- 10- Fire cabinets in buildings that are not within the scope of high-rise buildings and in workshops, workshops, warehouses, accommodation, health, assembly purposes and educational buildings with a total indoor usage area of less than 1000 m², in closed car parks with a total area of less than 600 m², in boiler rooms with a thermal capacity of 350 kW and / or floor area under 100 m²,
- 11- Installation of an automatic sprinkler system in all buildings other than residential buildings with a building height of less than 30.50 m, in residential buildings with a building height of less than 51.50 m, in multi-storey stores with a total area of less than 2000 m², in shopping,

- commercial and entertainment places, in buildings with a total area of less than 1000 m², where easily flammable and flammable substances are produced or kept,
- 12- The material of the ceiling coverings and suspended ceilings of the buildings should be at least flammable,
 - 13- Roof carrier system and roof coverings must be non-combustible material,
 - 14- Installation of automatic extinguishing system in the hoods of the kitchens in shopping centres and high-rise buildings and installation of gas detection, gas cut-off and warning installations according to the properties of the gas used in the stoves,
 - 15- 15- Automatic sprinkler system in closed car parks with a total area of less than 600 m² and where less than 10 vehicles are taken by lift,
 - 16- 16- The presence of a bus-bar system in the shaft in buildings with a building height below 51.50 m,
 - 17- 17- Leaving connection ports on the wet or dry fixed pipe system on buildings that are not within the scope of high-rise buildings and shopping centres with a floor area of less than 1000 m², car parks and similar places, allowing the use of fire brigade personnel and trained personnel,
 - 18- 18- In buildings that are not within the scope of high-rise buildings or in buildings with a building seating area of less than 1000 m² or in buildings with a facade width not exceeding 75 m, a fire brigade water supply connection with a nominal diameter of at least 100 mm to the water fire extinguishing systems so that the fire brigade can flood the system from outside,
 - 19- Use of explosion and spark-proof fans, ventilation motors, cable and panel installations.

9- MATERIALS AND RESOURCES (Ref:5, Ref:120)

With material selection and resource management, architects, engineers, contractors and users should be directed to the selection of building materials with positive environmental impact. Therefore, it is aimed to reduce the negative environmental impact of the buildings and to make the life cycle healthier. In this context, it is aimed to reduce the use of exhaustible and non-renewable natural resources, to reduce the carbon footprint in the life cycle of the building material from the source of the raw material to its use in the building and not to use materials that adversely affect the health of the building users.

9 (A) Environmental Product Declaration

The main goal is to create environmentally friendly structures by using building materials with minimised environmental impact throughout their life cycle. Request the 'Environmental Product Declaration' provided by the architect, engineer, contractor or user from the building material manufacturer/supplier. As the demand increases, the production of healthy materials will also increase.

9 (B) Responsible and Local Sourcing

It is aimed to reduce the supply of materials from exhaustible and non-renewable natural resources and to reduce the carbon footprint and environmental impact of the material by promoting sustainable sourcing. In addition, it is aimed to reduce greenhouse gas emissions from transport by encouraging the sourcing of materials from local sources.

Building materials specified in new building and existing building renovation projects or permanently installed wood materials according to the project must be obtained from sustainable

sources with low environmental impact. In addition, the fact that the material is obtained from responsible sources must be certified with one of the FSC, FSC CoC, GRI, TS En ISO 14001 documents.

The fact that the materials specified in the new building or existing building renovation projects were procured from the region within a radius of 200 km is also an indication of the use of local resources.

9 (C) Reusable Material Selection

It is aimed to reduce the use of resources and waste generation through the use of materials, thus promoting sustainability-based design.

C-1 Use of Salvaged Material

It is aimed to minimise the environmental impacts caused by the use of resources by reducing the use of natural resources with the use of salvaged materials, which is the use of structural elements, windows, carcass or facade materials, interior building elements such as walls, doors, etc., which were previously used as another building element, as a whole and used in a new building.

C-2 Removable-Attachable System Usage

It is aimed to reduce consumption and encourage sustainability-based design by enabling the reuse of these systems in line with the needs that may change with the use of removable systems.

C-3 Use of Recycled Materials

It is aimed to reduce the use of resources and waste by using recyclable materials.

C-4 Material Management After Completion of the Building Life Cycle

The topic "Materials Management after the End of the Life of the Building", which is the responsibility of the material provider on how to utilise the materials after the end of the life of the buildings or how to manage waste, aims to increase awareness about the life cycles of materials.

The post-use planning of the building materials determined by the architectural project can be documented by the material manufacturer.

10- SUSTAINABILITY

The sustainability of energy efficiency and green infrastructure improvements to be made with reference to this guide is essential. Our expectation from the applicants is to protect the investments made in the building, site management plans, decision books, to protect the systems and equipment based on energy efficiency, to carry out periodic maintenance, to protect green areas, to maintain domestic water (from the network), grey water, rainwater collection, drip irrigation systems and equipment, and to plan and maintain new improvements.

11- VOLUNTEER PARTICIPATION and INNOVATION

11 (A) Voluntary Participation (Ref:119)

The participation of real and legal persons who participate in local government services without expecting any material gain in the field of work by revealing their knowledge, skills and abilities, all kinds of joint work, opportunities and time is based on the principle of voluntariness and is the most effective way to achieve national goals in society.

Combating and adapting to the climate crisis we are experiencing as a result of global warming will accelerate the spread of voluntary participation, apart from the actions of all individual and institutional related parties to realise the importance of the situation, to know their responsibilities and to fulfil the requirements of the legislation.

It will be possible to realise the improvements listed in this guide with the voluntary participation of our citizens. As a result, less energy consumption, protection of water and other natural resources will be ensured, in addition to environmental gains, it will be possible to achieve success with the principle of unity for a sustainable healthy environment with its contribution to the citizen economy.

With the Neighbourhood Card Application of our municipality, we aim to achieve our national targets (separation of wastes at the source, bringing the separated clean packaging and other wastes to the economy as a raw material source through recycling and recovery, protecting our soil and water by sending less household waste to landfill while doing these...). The Neighbourhood Card project, which supports this goal, is the most concrete example of voluntary participation, where the separated wastes in the household are weighed and purchased with a Visa card issued in the name of the woman of the house, and a reward system is developed in return.

11 (B) Innovation

Energy efficiency, the use of renewable energy sources, new and effective solution methods for the conservation of natural resources, and numerous researches and uncommon applications are among the most important current issues by scientific research institutions. As a result of rapidly developing technologies, funding resources are transferred to pilot applications of scientific research and R&D studies, and numerous application examples are developed for a carbon neutral world.

Examples of these studies are given below.

- Supporting the energy consumption of the building with system solutions such as air, ground or water source heat pumps, cogeneration and microcogeneration in order to fully or partially meet the heating, cooling, ventilation, sanitary hot water, electricity and lighting energy needs for all buildings,
- The use of "Solar Tower Systems" in the production of electrical energy from solar energy,
- Electric energy production with Solar Chimney System,
- Special design applications on building facades or roofs to utilise sunlight,
- Flood barrier, wall and column protectors in car parks, seismic isolators,
- Creating feeding and sheltering areas for domestic and stray animals within the project site, and granting permission to accommodate pets in independent units,
- Creating mini agricultural areas within the project area for individual production,
- Emergency announcement system and/or fire alarm in the common area of the building,
- Pest and rodent control with nature-based solutions that do not harm the ecology,
- The presence of equipment such as remote access - heating - cooling - device control - analyser and smart home / workplace automation systems in buildings.

CHAPTER 3

ARTICLE 6

GUIDE PREPARATION COMMITTEE			
Dr. Cemil TUGAY	Mayor		
Saadet AĐLIN	Chemical Engineer	Deputy of Mayor	
İlker EROL	Environmental Eng.	Director	/ CC&ZW* Directorate
Aylin AKÇIL	Environmental Engineer		CC&ZW Directorate
Cihangir Alp ERDOĐAN	Electrical and Electronic Engineer		CC&ZW Directorate
Doruk KARAKOÇ	Mechanical Engineer	Directorate of Zoning and Urbanisation	
Gökçe ÖZDEN	Mechanical Engineer	Directorate of Zoning and Urbanisation	
Sinem KARAKUNDAK	Architect	Urban Design Directorate	
Didem KARACA	Mechanical Engineer	Urban Design Directorate	
Pelin KAYA	Construction Engineer	Urban Transformation Directorate	
Cenk ÖZGEN	Environmental Engineer	EP&C ** Directorate	
Ali BAYINDIR	Electrical and Electronic Eng.	Directorate of Public Works	
Derya BAYRAKÇI	Landscape Architect	Directorate of Parks and Gardens	

*Climate Change and Zero Waste

** Environmental Protection and Control

CHAPTER 4

ARTICLE 7

ANNEXES

Annex 1 : Drought Resistant Plants

It is aimed to restore the natural vegetation to the green areas in the city by selecting the plant species to be used in the green area as plant species suitable for the natural flora of the Mediterranean and Izmir. It is desired to spread a highly adaptable landscape understanding throughout the city with the spread of frigana or maquis element plants with less water requirement. When these choices are taken into consideration, the value of the urban ecosystem will be increased, while at the same time saving water and reducing maintenance costs.

SIRA	LATİNCE ADI	TÜRKÇE ADI
	AĞAÇLAR	
1	<i>Pinus brutia</i>	Kızılcım
2	<i>Pinus nigra</i>	Karaçam
3	<i>Pinus pinea</i>	Fıstık çamı
4	<i>Cupressus sempervirens</i>	Kara selvi
5	<i>Juniperus excelsa</i>	Ardıç
6	<i>Quercus ithaburensis</i>	Palamut meşesi
7	<i>Quercus pubescens</i>	Tüylü meşe
8	<i>Quercus aucheri</i>	Boz pırnal meşesi
9	<i>Quercus ilex</i>	Pırnal Meşesi
10	<i>Quercus infectoria</i>	Mazı meşesi
11	<i>Quercus cerris</i>	Türk meşesi
12	<i>Liquidambar orientalis</i>	Sığla
13	<i>Ulmus canescens</i>	Boz karaağaç, karangiç
14	<i>Acer sempervirens</i>	Doğu akçaağacı
15	<i>Fraxinus ornus</i>	Çiçekli dişbudak
16	<i>Celtis australis</i>	Çitlembik
17	<i>Populus alba</i>	Akkavak
18	<i>Amygdalus communis</i>	Badem
19	<i>Prunus spinosa</i>	Çakal eriği
20	<i>Eleagnus angustifolia</i>	İğde
21	<i>Ficus carica</i>	İncir
22	<i>Cercis siliquastrum</i>	Erguvan
23	<i>Ceratonia siliqua</i>	Keçiboynuzu
24	<i>Platanus orientalis</i>	Doğu Çınarı
25	<i>Alnus glutinosa</i>	Kızılağaç
26	<i>Pistacia terebinthus</i>	Menengiç
27	<i>Salix alba</i>	Aksöğüt
28	<i>Pyrus amygdaliformis</i>	Ahlat
	ÇALILAR	
29	<i>Juniperus oxicedrus</i> subsp. <i>communis</i>	Katran ardıcı
30	<i>Juniperus oxicedrus</i> subsp. <i>macrocarpa</i>	Büyük kozalaklı katran ardıcı
31	<i>Juniperus phoenicea</i>	Finike ardıcı
32	<i>Crataegus monogyna</i>	Alıç

33	<i>Arbutus andrachne</i>	Sandal ağacı
34	<i>Arbutus unedo</i>	Kocayemiş
35	<i>Laurus nobilis</i>	Defne
36	<i>Olea europaea</i>	Delice zeytin
37	<i>Phillyrea latifolia</i>	Akçakesme
38	<i>Quercus coccifera</i>	Kermes meşesi
39	<i>Rhamnus alaternus</i>	Geyikdiken
40	<i>Paliurus spina christii</i>	Karaçalı
41	<i>Sambucus nigra</i>	Mürver
42	<i>Styrax officinalis</i>	Ayı fındığı
43	<i>Vitex agnus castus</i>	Hayıt
44	<i>Tamarix smyrensis</i>	İzmir ılgını
45	<i>Myrtus communis</i>	Mersin
46	<i>Spartium junceum</i>	Katırtırnağı
47	<i>Anagyris foetida</i>	Kokarçalı
48	<i>Calicotome villosa</i>	Keçiboğan
49	<i>Rosa canina</i>	Kuşburnu
50	<i>Alcea pallida</i>	Hatmi
BODUR ÇALILAR		
51	<i>Ephedra campylopoda</i>	Deniz üzümü
52	<i>Ballota acetabulosa</i>	Bozçalı
53	<i>Jasminum fruticans</i>	Sarı çiçekli yasemin
54	<i>Lavandula stoechas</i>	Karabaşotu
55	<i>Cistus salviifolius</i>	Adaçayı yapraklı laden
56	<i>Cistus creticus</i>	Girit ladeni
57	<i>Rosmarinus officinalis</i>	Biberiye
58	<i>Ruscus aculeatus</i>	Tavşanmemesi
59	<i>Salvia fruticosa</i>	Adaçayı
60	<i>Capparis spinosa</i>	Kapari
61	<i>Sarcopoterium spinosum</i>	Abdestbozan
62	<i>Smyrniun rotundifolium</i>	Yabani kereviz
63	<i>Origanum onites</i>	İzmir kekiği
64	<i>Thymbra capitata</i>	Acıkekik
65	<i>Erica manipuliflora</i>	Püren,funda
66	<i>Asparagus acutifolius</i>	Kuşkonmaz
67	<i>Campanula lyrata</i>	Çan çiçeği
68	<i>Ferula communis</i>	Atkasnağı
SARILICI BİTKİLER		
69	<i>Hedera helix</i>	Orman sarmaşığı
70		Vitis vinifera
71	<i>Clematis cirrhosa</i>	Bahar sarmaşığı,akasma
72	<i>Lonicera etrusca var.etrusca</i>	Hanımeli
73	<i>Smilax aspera</i>	Akdeniz saparnası
SOĞANLI,RİZOMLU VE YUMRULU BİTKİLER		
74	<i>Drimia maritima</i>	Ada soğanı
75	<i>Gynandiriris sisyrinchium</i>	Keklik çiğdemi
76	<i>Galanthus elwessii</i>	İnce kardelen
77	<i>Anemone coronaria</i>	Anemon
78	<i>Lilium candidum</i>	Ak zambak
79	<i>Cyclamen hederifolium</i>	Sıklamen

80	Sternbergia lutea	Göçgöç çiğdemi
81	İris orientalis	Ankara süseni
82	Gladiolus illyricus	Osman çiçeği
83	İris suaveolens	Bodur süsen
84	Colchicum variegatum	Sonbahar çiğdemi
85	Asphodelus aestivus	Çirişotu
86	Narcissus tazetta	Nergis
ÇİM BİTKİLERİ		
87	Dactylis glomerata	Domuz ayrığı
88	Cynodon dactylon	Köpekdişi
89	Lolium rigidum	Sert çim
90	Lolium temulentum	Delice çim
91	Trifolium pratense	Çayır üçgülü
92	Bellis perennis	Koyungözü

Annex 2: Energy Identity Certificate



Annex 3: Flammability Tables

**Table-1: Building Materials with Flammability Class A1
(Materials assessed as flammability class A1 and A1fl without the need for testing)**

Material	Notes
Expanded clay, expanded perlite and expanded vermiculite, mineral wool, cellular glass	
Concrete	Ready mixed concrete and precast reinforced concrete prestressed and precompressed materials
Concrete (dense and lightweight, except for aggregates with integral thermal insulation)	It may contain additives and additions (e.g. PFA), pigments and other materials. Also includes precast units
Gas (porous) concrete units	Units produced by combining water-based binders such as cement and/or lime with fine substances (siliceous substances, PFA, volatile furnace slag) and pore-producing substances. It also includes precast units.
Cement, fibrous cement and lime, blast furnace slag/powdered fly ash (PFA) and mineral aggregates	
Iron, steel and stainless steel, copper and copper alloys, zinc and zinc alloys, aluminum and aluminum alloys, lead	Not having a completely separate form (shapeless)
Gypsum and gypsum-based plasters	It may contain additives (retardants, fillers, fibers, pigments, hydrated lime, air and water retainers and plasticizers), dense aggregate (e.g. natural or crushed sand) or lightweight aggregates (e.g. perlite or vermiculite).
Mortars with inorganic binding elements	Leveling/plastering mortars and screeds based on one or more inorganic binders, such as: cement, lime, masonry cement and gypsum.
clay materials	Includes units, bricks, tiles, floor tiles and fireplace units (for example: chimney bricks) made of clay and other clayey materials with or without sand, fuel or other additives.
Calcium silicate units	Units made of lime and natural siliceous materials (sand, siliceous gravel or rock, or mixtures made thereof) may contain coloring pigments.
Natural stone and slate units	Worked or unworked elements obtained from natural stones (igneous, sedimentary or metamorphic rocks) or slates.

plaster units	Aggregates include units and blocks consisting of calcium sulfate and water combined with fillers, fibers and other additives and which can be colored with pigments.
cement mosaic	Includes tile mosaics and cast-in-place flooring.
Pine	Heat strengthened, chemically solidified, laminated and wired glass.
glass ceramic	Glass ceramics containing crystal and residual glass.
Ceramic	Covers powder pressed and extruded materials, glazed or unglazed.
<p>General Notes</p> <p>If the materials are considered A1 and A1fl class without testing, they must consist of only one or more of the above materials. Materials obtained by gluing one or more of the above materials are also considered to be A1 and A1fl classes, unless the adhesive substance exceeds 0.1% by weight or volume (whichever is lower).</p> <p>Panel materials (e.g. insulation materials) that have one or more organic layers, or that contain organic matter that is not distributed homogeneously (other than the adhesive), are excluded from the list.</p> <p>Materials formed by coating one of the above materials with an inorganic layer (e.g. coated metal materials) can also be considered A1 and A1fl class without testing.</p> <p>None of the materials in the table is allowed to contain more than 1.0% homogeneously distributed organic matter by weight or volume (whichever is lower).</p>	

Table-2: Flammability Classes of Building Materials according to TS EN 13501-1 and TS EN 13501-5

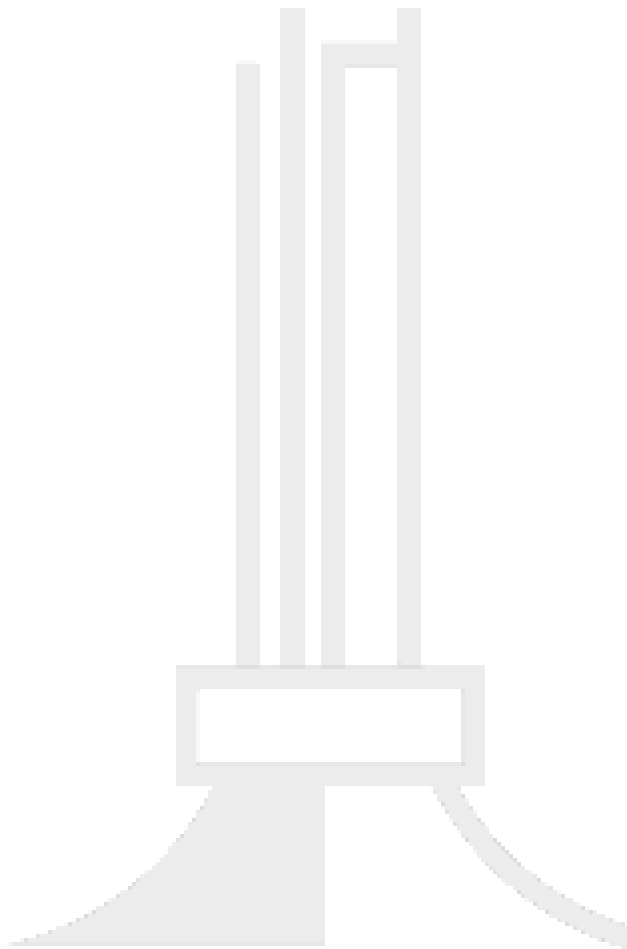
Flammability Classes for Building Materials Other than Floors	
Flammability of the Material	TS EN 13501-1 ⁽²⁾
Never Burns	A1
Highly Flammable	A2 – s1, d0
Highly Flammable (least)	B, C – s1, d0
	A2 – s2, d0
	A2, B, C – s3, d0
	A2, B,C – s1, d1
	A2, B,C – s1, d2
(least)	A2, B, C – s3, d2
Normal Flammable (least)	D – s1, d0
	D – s2, d0
	D – s3, d0
	E
	D – s1, d2
	D – s2, d2
	D – s3, d2
(least)	E – d2
Highly Flammable	F
Flammability Classes for Flooring Materials	
Flammability of the Material	TS EN 13501-1'e göre ⁽²⁾
Never Burns	A _{1FL}
Highly Flammable	A _{2FL} – s1
Highly Flammable	B _{FL} – s1
(least)	C _{FL} – s1
Normal Flammable (least)	A _{2FL} – s2
	B _{FL} – s2
	C _{FL} – s2
	D _{FL} – s1
	D _{FL} – s2
(least)	E _{FL}
Highly Flammable	F _{FL}
Flammability Classes for Roof Coverings	
Flammability of the Material	TS EN 13501-5'e göre (2)
Resistant to External Flame Spread	BROOF
Flammability Class BROOF roofing materials	
The term BROOF roof covering, which meets all the requirements of "External fire performance" features without the need for testing, is used to describe the product that forms the top layer in the roof formation.	
Slates: Natural slates, artificial slates	Compliant with Annex-2/C restrictions

Tiles: Stone, concrete, clay, ceramic or steel roof tiles	Compliant with Annex-2/C restrictions. Any outer coating must be inorganic or have a PCS (Gross Caloric Value) \leq 4MJ/m ² or a mass \leq 200 g/m ²
Cement-based fiber boards: Flat and profiled sheets, slates	Compliant with Annex-2/C restrictions or PCS (Gross Caloric Value) \leq 4MJ/m ²
Profiled metal sheets: Aluminium, aluminum alloy, copper, copper alloy, zinc, zinc alloy, uncoated steel, stainless steel, galvanized steel, ring sheet coated steel, vitrified enameled steel	Thickness \geq 0.4 mm, any outer coating must be inorganic or PCS (Gross Caloric Value) \leq 4MJ/m ² or mass \leq 200 g/m ²
Flat metal sheets: Aluminum, aluminum alloy, copper, copper alloy, zinc, zinc alloy, uncoated steel, stainless steel, galvanized steel, ring sheet coated steel, vitrified enameled steel	Thickness \geq 0.4 mm, any outer coating must be inorganic or have a PCS (Gross Caloric Value) \leq 4.0 MJ/m ² or mass \leq 200 g/m ² .)
Materials intended to be completely covered by the inorganic coatings listed in the side column in normal use	Loosely laid gravel with a thickness of at least 50 mm or a mass of \geq 80 kg/m ² (aggregate size of at least 4 mm and at most 32 mm), Sand/cement screed at least 30 mm thick, cast artificial stone or mineral substrates at least 40 mm thick

Annex 4 : Wastes Accepted to 1st Class Waste Collection Centre

Waste Group	Waste Code	Waste
1	15 01 01	Paper and cardboard packaging
	15 01 05	composite packaging
	20 01 01	Paper and cardboard
2	15 01 02	Plastic packaging
	20 01 39	plastics
3	15 01 04	metallic packaging
	20 01 40	Metals
4	15 01 07	glass packaging
	20 01 02	Pine
5	15 01 03	wooden packaging
	20 01 38	Wood other than 20 01 37
6	15 01 09	textile packaging
	20 01 10	clothes
	20 01 11	textile products
7	16 06 01*	lead batteries
8	16 06 02*	Nickel cadmium batteries
	16 06 03*	Batteries containing mercury
	16 06 04	Batteries containing mercury
	16 06 05	Batteries containing mercury
	20 01 33*	Batteries and accumulators falling within 16 06 01, 16 06 02 or 16 06 03, and unclassified mixed batteries and accumulators containing these batteries
	20 01 34	Batteries and accumulators other than those mentioned in 20 01 33
9	20 01 21*	Fluorescent lamps and other mercury-containing waste
10	20 01 23*	Discarded equipment containing chlorofluorocarbons
	20 01 35*	Scrapped electrical and electronic equipment containing dangerous parts other than those mentioned in 20 01 21 and 20 01 23
	20 01 36	Recycled electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
	09 01 10	Disposable cameras that work without batteries
	09 01 11	Disposable cameras powered by batteries mentioned in 16 06 01, 16 06 02 or 16 06 03

	09 01 12	Battery-operated disposable cameras other than those mentioned in 09 01 11
11	20 01 31*	Cytotoxic and cytostatic drugs
	20 01 32	Medicines other than 20 01 31
12	20 01 25	Edible oils and fats
	20 01 26*	Oils and fats other than those mentioned in 20 01 25
13	20 03 07	bulky waste
	16 01 03	End-of-life tires



Annex 5 : U Values of Window Systems

Pencerelerin Isı Geçirgenlik Katsayıları (U_{pencere})

- Yalıtım camlarının ara boşluk genişliği,
- Yalıtım camlarının ara boşluk dolgusu,
- Camların yayınım değeri ve
- Doğramaların $U_{\text{doğrama}}$ değerleri ile saptanmaktadır.

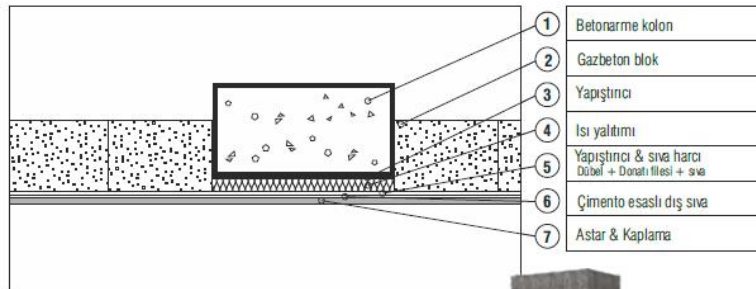
U_{cam} katsayısının çeşitli doğrama tipleriyle birleştirilmesi sonucunda oluşturulabilecek U_{pencere} değerleri Tablo 5'de gösterilmektedir.

$U_{\text{doğrama}}$ (W/m ² K)	1,0	1,4	1,8	2,2	2,6	3,0	3,4	3,8	7,0	
U_{cam} (W/m ² K)	U_{pencere} (W/m ² K)									
Çiftcam	3,3	2,9	3,0	3,1	3,2	3,3	3,4	3,4	3,5	4,0
	3,1	2,8	2,8	2,9	3,0	3,1	3,5	3,3	3,4	3,9
	2,9	2,6	2,7	2,8	2,8	3,0	3,0	3,1	3,2	3,7
	2,7	2,4	2,5	2,6	2,7	2,8	2,9	3,0	3,0	3,6
	2,5	2,3	2,4	2,5	2,6	2,7	2,7	2,8	2,9	3,4
	2,3	2,1	2,2	2,3	2,4	2,5	2,6	2,7	2,7	3,3
	2,1	2,0	2,1	2,2	2,2	2,3	2,4	2,5	2,6	3,1
	1,9	1,8	1,9	2,0	2,1	2,2	2,3	2,3	2,4	3,0
	1,7	1,7	1,8	1,8	1,9	2,0	2,1	2,2	2,3	2,8
	1,5	1,5	1,6	1,7	1,8	1,9	1,9	2,0	2,1	2,6
1,3	1,4	1,4	1,5	1,6	1,7	1,8	1,9	2,0	2,5	
1,1	1,2	1,3	1,4	1,4	1,5	1,6	1,7	1,8	2,3	
Üçlü cam	2,3	2,1	2,2	2,3	2,4	2,5	2,6	2,6	2,7	3,2
	2,1	2,0	2,0	2,1	2,2	2,3	2,4	2,5	2,6	3,1
	1,9	1,8	1,9	2,0	2,0	2,2	2,2	2,3	2,4	2,9
	1,7	1,6	1,7	1,8	1,9	2,0	2,1	2,2	2,2	2,8
	1,5	1,5	1,6	1,7	1,8	1,9	1,9	2,0	2,1	2,6
	1,3	1,4	1,4	1,5	1,6	1,7	1,8	1,9	2,0	2,5
	1,1	1,2	1,3	1,4	1,4	1,5	1,6	1,7	1,8	2,3
	0,9	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,6	2,2
	0,7	0,9	1,0	1,0	1,1	1,2	1,3	1,4	1,5	2,0
0,5	0,7	0,8	0,9	1,0	1,1	1,2	1,2	1,3	1,8	

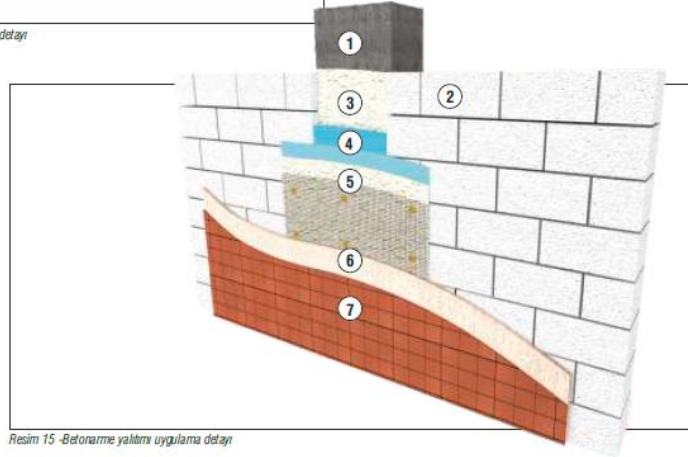
Tablo 5. Pencere sistemlerinin (cam + doğrama) U değerleri

Annex 6 : Insulation Details of Reinforced Concrete Elements

Betonarme Yalıtımı



Şekil 15 - Betonarme yalıtım uygulama detayı



Resim 15 - Betonarme yalıtım uygulama detayı

CHAPTER 5

ARTICLE 8

SOURCES / REFERENCES / STANDARDS

GENERAL

Ref 1 : 2872 sayılı Çevre Kanunu (11 Ağustos 1983 tarihli, 18132 sayılı Resmi Gazete)

Ref 2 : 5393 sayılı Belediye Kanunu (13 Temmuz 2005 tarihli, 25874 sayılı Resmi Gazete)

Ref 3 : İzmir Büyükşehir Belediyesi İmar Yönetmeliği (3 Haziran 2021 tarihli, 31500 sayılı Resmi Gazete)

Ref 4 : 2021 Karşıyaka Belediyesi Sürdürülebilir Enerji ve İklim Eylem Planı

ENERGY USAGE AND PERFORMANCE

Ref 5 : T.C. Çevre, Şehircilik ve İklim Değişikliği Bakanlığı Yeşil Sertifika Bina Değerlendirme Kılavuzu

Ref 6 : Planlı Alanlar İmar Yönetmeliği

Ref 7 : Isınmadan Kaynaklanan Hava Kirliliğinin Kontrolü Yönetmeliği

Ref 8 : Binalarda Enerji Performansı Ulusal Hesaplama Yöntemine Dair Tebliğ (Tebliğ no: MHG/2017-26)

Ref 9 : Enerji Kaynaklarının ve Enerjinin Kullanımında Verimliliğin Artırılmasına Dair Yönetmelik

Ref 10 : 5267 sayılı Enerji Verimliliği Kanunu

Ref 11 : 5346 Yenilenebilir Enerji Kaynaklarının Elektrik Enerjisi Üretimi Amaçlı Kullanımına İlişkin Kanun

Ref 12 : Güneş Enerjisine Dayalı Elektrik Üretim Tesisleri Hakkında Yönetmelik

Ref 13 : TS 825:2013 Binalarda Isı Yalıtım Kuralları

Ref 14 : TS ISO 9459-1:1999 Güneş enerjisi Konut su ısıtma sistemleri

Ref 15 : 6446 sayılı Elektrik Piyasası Kanunu

Ref 16 : TS 2164:1983/T3: 2011- Kalorifer Tesisatı Projelendirme Kuralları

Ref 17 : Asansör Yönetmeliği

Ref 18 : Asansör Periyodik Kontrol Yönetmeliği

Ref 19 : Asansör İşletme ve Bakım Yönetmeliği

Ref 20 : Asansör Piyasa Gözetimi ve Denetimi Yönetmeliği

Ref 21 : Asansörlerin Tasarımına İlişkin Usul ve Esaslara Dair Tebliğ (SGM: 2017/18)

Ref 22 : İzmir Büyükşehir Belediyesi İmar Yönetmeliği (3 Haziran 2021 tarihli, 31500 sayılı Resmi Gazete)

Ref 23 : Binalarda Enerji Performansı Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik (19 Şubat 2022 tarihli, 31755 sayılı Resmi Gazete)

Ref 24 : Klimaların Enerji Etiketlemesine Dair Tebliğ (SGM/2013-11)

Ref 25 : TS 7363 - Doğal gaz - Bina iç tesisatı projelendirme ve uygulama kuralları

Ref 26 : Enerji ile İlgili Ürünlerin Çevreye Duyarlı Tasarımına İlişkin Yönetmelik

Ref 27 : Elektrik Motorlarının ve Değişken Hız Sürücülerinin Çevreye Duyarlı Tasarım Gerekliliklerine Dair Tebliğ (2019/1781/AB) (SGM: 2021/16)

Ref 28 : Enerji Etiketlemesi Çerçeve Yönetmeliği

Ref 29 : Ev Tipi Çamaşır Makineleri ile Ev tipi Kurutmalı Çamaşır Makinelerinin Enerji Etiketlemesine Dair Tebliğ (2019/2014/AB) (SGM:2021/4)

Ref 30 : Ev Tipi Bulaşık Makinelerinin Enerji Etiketlemesine Dair Tebliğ (2019/2017/AB) (SGM:2021/2)

Ref 31 : Ev Tipi Fırınların ve Aspiratörlerin Enerji Etiketlemesine Dair Tebliğ (SGM-2015/8)

Ref 32 : Soğutma Cihazlarının Enerji Etiketlemesine Dair Tebliğ (2019/2016/AB) (SGM:2021/8)

Ref 33 : Konut Tipi Havalandırma Ünitelerinin Enerji Etiketlemesine Dair Tebliğ (1254/2014/AB) (SGM: 2021/19)

Ref 34 : Su Isıtıcıları, Sıcak Su Tankları ve Su Isıtıcısı ve Güneş Enerjisi Cihazı Paketlerinin Enerji Etiketlemesine Dair Tebliğ (SGM: 2018/2)

Ref 35 : Mahal Isıtıcıları, Kombine Isıtıcılar, Mahal Isıtıcısı, Sıcaklık Kontrolü ve Güneş Enerjisi Cihazı Paketleri ve Kombine Isıtıcı, Sıcaklık Kontrolü ve Güneş Enerjisi Cihazı Paketlerinin Enerji Etiketlemesine Dair Tebliğ (SGM: 2018/1)

WATER AND WASTE WATER MANAGEMENT

Ref 36 : T.C. Çevre, Şehircilik ve İklim Değişikliği Bakanlığı Yeşil Sertifika Bina Değerlendirme Kılavuzu

Ref 37 : TS 266 Sular-İnsani Tüketim Amaçlı Sular Standardı

Ref 38 : İnsani Tüketim Amaçlı Sular Hakkında Yönetmelik

Ref 39 : Yağmur Suyu Toplama, Depolama ve Deşarj Sistemleri Hakkında Yönetmelik

Ref 40 : İzmir Büyükşehir Belediyesi Sünger Kent Uygulamaları Yönetmeliği

Ref 41 : TS 325 Bataryalar

Ref 42 : TS EN 274 Sifonlar, Lavabo ve Küvetler

Ref 43 : TS 366 Hela Yıkayıcılar

Ref 44 : TS EN 411 Sifonlar, Mutfak Evyeleri İçin

Ref 45 : TS 823 Rezervuarlar ve Doldurma – Boşaltma Grupları

Ref 46 : TS EN 200:2010 Sıhhi tesisat armatürler

Ref 47 : TS EN 817 Bataryalar, Mekanik Karıştırıcı

Ref 48 : TS EN 13407 Asma pisuarlar - İşlevsel gerekler ve deney yöntemleri

Ref 49 : TS 800 EN 997 Tek parça ve takım klozetler – Sifonlu

Ref 50 : TS EN 200:2010 Sıhhi tesisat armatürler

Ref 51 : Ölçü ve Ölçü Aletleri Muayene Yönetmeliği

Ref 52 : 2872 sayılı Çevre Kanunu

Ref 53 : 3194 sayılı İmar Kanunu

Ref 54 : Su Kirliliği Kontrolü Yönetmeliği

Ref 55 : Yüzeysel Sular Ve Yeraltı Sularının İzlenmesine Dair Yönetmelik

Ref 56 : Planlı Alanlar İmar Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik (25.02.2022 tarihli, 31761 sayılı Resmi Gazete)

Ref 57 : İzmir Büyükşehir Belediyesi İmar Yönetmeliği (3 Haziran 2021 tarihli, 31500 sayılı Resmi Gazete)

Ref 58 : Planlı Alanlar İmar Yönetmeliği (03.07.2017 tarihli, 30113 sayılı Resmi Gazete)

Ref 59 : Binalarda Su Yalıtımı Yönetmeliği (27 Ekim 2017 tarihli, 30223 sayılı Resmi Gazete)

INDOOR ENVIRONMENT QUALITY

Ref 60 : T.C. Çevre, Şehircilik ve İklim Değişikliği Bakanlığı Yeşil Sertifika Bina Değerlendirme Kılavuzu

Ref 61 : Hava Kalitesi Değerlendirme ve Yönetimi Yönetmeliği

Ref 62 : Planlı Alanlar İmar Yönetmeliği

Ref 63 : İzmir Büyükşehir Belediyesi İmar Yönetmeliği

Ref 64 : ASHRAE 62.1. Kabul Edilebilir İç Mekân Hava Kalitesi (Ventilation for Acceptable Indoor Air Quality)

Ref 65 : Binalarda Enerji Performansı Yönetmeliği

Ref 66 : DIN 1946-6. Konutların Havalandırılması

Ref 67 : TS EN 16798. Binaların enerji performansı

Ref 68 : TS EN 12599. Binalarda Havalandırma

Ref 69 : TS EN 779. Hava Filtreleri

Ref 70 : Türk Standartları Enstitüsü (TSE) (2014). Işık ve Aydınlatma- İş Yerlerinin Aydınlatılması- Bölüm 1: TS EN 12464-1

Ref 71 : TS EN 12464-1 Kapalı Çalışma Alanları Aydınlatması

Ref 72 : Binaların Gürültüye Karşı Korunması Hakkında Yönetmelik

Ref 73 : TS EN 15251:2014 Binaların enerji performansının tasarımı ve değerlendirilmesi için bina içi ortam parametreleri

Ref 74 : TS ISO 1996-1. Akustik- Çevre Gürültüsünün Tanımı, Ölçülmesi ve Değerlendirilmesi- Bölüm 1

Ref 75 : TS ISO 1996-2. Akustik- Çevre Gürültüsünün Tanımı, Ölçülmesi ve Değerlendirilmesi- Bölüm 2

Ref 76 : Çevresel Gürültünün Değerlendirilmesi ve Yönetimi Yönetmeliği

GREEN INFRASTRUCTURE APPLICATIONS

Ref 77 : İzmir Büyükşehir Belediyesi İmar Yönetmeliği (3 Haziran 2021 tarihli, 31500 sayılı Resmi Gazete)

Ref 78 : İzmir Büyükşehir Belediyesi Sünger Kent Uygulamaları Yönetmeliği

Ref 79 : Biyofilik Kentsel Tasarım İlkeleri

Ref 80 : İzmir Büyükşehir Belediyesi Park ve Bahçeler Dairesi Başkanlığı (21 Mayıs 2021 tarih, 179901 sayılı yazısı)

TRANSPORTATION

Ref 81 : İzmir Büyükşehir Belediyesi Otopark Yönetmeliği Uygulama Esasları

Ref 82 : TS 10551. Şehir içi Yollar - Otolar için Otopark Tasarım Kuralları

WASTE MANAGEMENT

Ref 83 : Ambalaj Atıklarının Kontrolü Yönetmeliği (26 Haziran 2021 tarihli, 31523 sayılı Resmi Gazete)

Ref 84 : Atık Elektrikli ve Elektronik Eşyaların Kontrolü Yönetmeliği (22 Mayıs 2012 tarihli, 28300 sayılı Resmi Gazete)

Ref 85 : Atık Pil ve Akümülatörlerin Kontrolü Yönetmeliği (31 Ağustos 2004 tarihli, 25569 sayılı Resmi Gazete)

Ref 86 : Atık Yağların Yönetimi Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik (23 Aralık 2020 tarihli, 31343 sayılı Resmi Gazete)

Ref 87 : Bitkisel Atık Yağların Kontrolü Yönetmeliği (06 Haziran 2015 tarihli, 29378 sayılı Resmi Gazete)

Ref 88 : Sıfır Atık Yönetmeliği (12 Temmuz 2019 tarihli, 30829 sayılı Resmi Gazete)

LIGHT POLLUTION

Ref 89 : Genel Aydınlatma Yönetmeliği (27 Temmuz 2013 tarihli, 28720 sayılı Resmi Gazete)

Ref 90 : Karşıyaka Belediyesi Bina Dış Cephe Aydınlatmasında ve Diğer Hususlarda İlkelerin ve Uygulama Esaslarına İlişkin Yönerge (06.04.2021 tarih 72458193/84 Sayılı Meclis Kararı)

DISASTER MANAGEMENT

Ref 91 : Deprem Bölgelerinde Yapılacak Binalar Hakkında Yönetmelik

Ref 92 : TS EN 13380 Kanalizasyon ve Drenaj Sistemleri - Bina dışı Tamir ve Yenileme için Kullanılan bileşenlerin genel özellikleri

Ref 93 : TS EN 12056-3:2000 Cazibeli drenaj sistemleri - Bina içi - bölüm 3: Çatı drenajı - Tasarım ve hesaplama

Ref 94 : Mekansal Planlar Yapım Yönetmeliği

Ref 95 : Afet ve Acil Durum Yönetimi Başkanlığının Teşkilat ve Görevleri Hakkında Kanun ve ilgili Mevzuat.

Ref 96 : İmar Kanunu ve Yönetmelikleri

Ref 97 : Binaların Yangından Korunması Hakkında Yönetmelik

Ref 98 : TS 12116/T1. Yangın Önleme- Yapı Malzemeleri-Yangına Dayanıklılık Sınıfları ve Özellikleri

Ref 99 : TS 7394. Yangından Korunma- Terimler-Korunma İçin Yapı Elemanları

Ref 100 : TS 7395. Yangından Korunma - Terimler - Tahliye ve Kaçış Yolları

Ref 101 : TS EN 13501-1+A1 Yapı Mamulleri ve Yapı Elemanları, Yangın Sınıflandırması

Ref 102 : Yapı Malzemeleri Yönetmeliği (305/2011/AB) ve Yapı Malzemelerinin Tabi Olacağı Kriterler Hakkında Yönetmelik Kapsamındaki Yapı Malzemelerinin Tabi Olacakları Performansın Değişmezliğinin Değerlendirilmesi ve Doğrulanması Sistemleri Hakkında Tebliğ (MHG/2017-14)

Ref 103 : Yapı Malzemeleri Yönetmeliği (305/2011/AB) Kapsamında, Yapı Malzemelerinin Yangına Tepki Sınıflarına, Yapı Elemanlarının Yangına Dayanıklılığına, Çatı Ve Çatı Kaplamalarının Dış Yangın Performansına Dair Tebliğ (MHG/2017-13)

MATERIALS AND RESOURCES

Ref 104 : TS EN 14025 Çevre Etiketleri ve Beyanları - Tip III Çevre Beyanları - Prensipler ve Prosedürler

Ref 105 : TS ISO 21930 Yapılarda Sürdürülebilirlik - Yapı Malzemelerinin Çevresel Beyanları

Ref 106 : Çevre Etiketleri Yönetmeliği

Ref 107 : BES 6001:2008. Framework Standard for Responsible Sourcing of Construction Products

Ref 108 : TS EN ISO 14001 Çevre Yönetim Sistemleri - Şartlar ve Kullanım Kılavuzu

Ref 109 : FSC: Forest Stewardship Council

Ref 110 : Sürdürülebilirlik Raporu - Global Reporting Initiative (GRI)

Ref 111 : Uluslararası Kurumlar İçin Ekonomik İşbirliği Kılavuzu - Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises

Ref 112 : BM Küresel Etki - UN Global Compact: Communication of Progress

Ref 113 : TS ISO 26000 Sosyal Sorumluluk İçin Rehber

Ref 114 : TS EN ISO 14001 Çevre Yönetim Sistemleri - Şartlar ve Kullanım Kılavuzu

Ref 115 : TS EN ISO 14004 Çevre Yönetim Sistemleri - Genel Uygulama Kuralları

DİĞER

Ref 116 : European Missions / 100 Climate-Neutral and Smart Cities by 2030 / Info Kit for Cities

Ref 117 : İzmir Büyükşehir Belediyesi Sürdürülebilir Enerji ve İklim Eylem Planı

Ref 118 : İzmir Büyükşehir Belediyesi Yeşil Şehir Eylem Planı

Ref 119 : 5393 Sayılı Belediye Kanunu

Ref 120 : ÇEDBİK – B.E.S.T. Sertifika Kılavuzu



Sürdürülebilir Kalkınma İçin
KÜRESEL AMAÇLAR

Yeşil Binaların Sürdürülebilir Kalkınma Hedeflerinin Gerçekleştirilmesine Katkıları

