

DIN EN 16798-1:2022-03 (E)

Energy performance of buildings - Ventilation for buildings - Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics - Module M1-6

Contents		Page
European foreword		5
Introduction		8
1 Scope		10
2 Normative references.....		11
3 Terms and definitions.....		12
4 Symbols and abbreviations.....		15
4.1 Symbols		15
4.2 Abbreviations.....		17
5 Interactions with other standards.....		17
6 Design input parameters for design of buildings and sizing of heating, cooling, ventilation and lighting systems		17
6.1 Introduction.....		17
6.2 Thermal environment.....		18
6.2.1 Heated and/or mechanically cooled buildings		18
6.2.2 Buildings without mechanical cooling.....		19
6.2.3 Increased air velocity		19
6.3 Design for Indoor air quality (ventilation rates)		19
6.3.1 General		19
6.3.2 Methods.....		21
6.3.3 Non-residential buildings		23
6.3.4 Residential buildings.....		23
6.3.5 Access to operable windows.....		23
6.3.6 Filtration and air cleaning.....		23
6.4 Humidity		24
6.5 Lighting.....		24
6.5.1 General		24
6.5.2 Non-residential buildings		24
6.5.3 Residential buildings.....		25
6.6 Noise		25
7 Indoor environment parameters for energy calculation		25
7.1 General		25
7.2 Thermal environment.....		25
7.2.1 General		25
7.2.2 Seasonal and monthly calculations		26
7.2.3 Hourly calculations		26
7.3 Indoor air quality and ventilation		26
7.4 Humidity		26
7.5 Lighting.....		26
7.5.1 Non-residential buildings.....		26
7.5.2 Residential buildings.....		27
Annex A (normative) All national recommended criteria for indoor environment.....		28
A.1 General		28
A.2 Recommended criteria for the thermal environment.....		29

A.2.1	Recommended categories for mechanically heated and cooled buildings	29
A.2.2	Acceptable indoor temperatures of buildings without mechanical cooling systems.....	31
A.2.3	Increased air velocity	32
A.2.4	Recommended indoor temperatures for energy calculations.....	33
A.3	Basis criteria for indoor air quality and ventilation rates	34
A.3.1	Design ventilation air flow rates for non-residential buildings.....	34
A.3.1.1	General.....	34
A.3.1.2	Method 1 - Method based on perceived air quality.....	34
A.3.1.3	Method 2 - Method using limit values of substance concentration.....	35
A.3.1.4	Method 3: Method based on predefined air flow rates.....	35
A.3.2	Design ventilation air flow rates for residential buildings.....	36
A.3.2.1	General.....	36
A.3.2.2	Design supply air flow rates.....	36
A.3.2.3	Design extract air flow rates	37
A.3.3	Ventilation air flow rate during unoccupied periods	38
A.3.3.1	Non-residential buildings	38
A.3.3.2	Residential buildings	38
A.3.4	The recommended criteria for dimensioning of humidification and dehumidification....	38
A.4	How to define low and very low polluting buildings.....	38
A.5	Examples of criteria for lighting	39
A.6	Indoor system noise criteria of some spaces and buildings.....	40
A.7	Criteria for substances in indoor air	40
A.8	Occupant schedules for energy calculations	42
Annex B (informative)	Default criteria for the indoor environment	44
B.1	General.....	44
B.2	Default criteria for the thermal environment	44
B.2.1	Default categories for mechanically heated and cooled buildings.....	44
B.2.2	Default acceptable indoor temperatures for buildings without mechanical cooling systems.....	47
B.2.3	Increased air velocity	49
B.2.4	Default indoor temperatures for energy calculations.....	50
B.3	Basis for the criteria for indoor air quality and ventilation rates.....	51
B.3.1	Default design ventilation air flow rates	51
B.3.1.1	General.....	51
B.3.1.2	Method 1: method based on perceived air quality.....	51
B.3.1.3	Method 2 - method using limit values of substance concentration.....	52
B.3.1.4	Method 3 Method based on predefined ventilation flow rates.....	53

B.3.1.5 Ventilation air flow rate during unoccupied periods	53
B.3.2 Default design ventilation air flow rates for residential buildings	53
B.3.2.1 General	53
B.3.2.2 Design supply air flow rates	53
B.3.2.3 Design extract air flow rates.....	54
B.3.2.4 Design opening areas for natural ventilation.....	55
B.3.2.5 Design ventilation air flow rate during unoccupied periods.....	55
B.3.3 The recommended criteria for dimensioning of humidification and dehumidification ...	56
B.4 Example on how to define low and very low polluting buildings.....	56
B.5 Examples of criteria for lighting.....	57
B.6 Indoor system noise criteria of some spaces and buildings	58
B.7 WHO health-based criteria for indoor air.....	59
B.8 Occupants schedules for energy calculations.....	60
Annex C (informative) Occupants schedules for energy calculations.....	63
Bibliography	77