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, ther mal 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**