

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 |