DIN EN 13084-1:2025-04 (E)

Free-standing chimneys - Part 1: General requirements

Contents

Page

European foreword 4

1 Scope 6

2 Normative references 6

3 Terms and definitions 6
3.1 General terms 7
3.2 Terms for chimney parts 8
3.3 Terms for operation 9

4 General requirements 10
4.1 Materials 10
4.2 Flue gas considerations 10
4.2.1 General 10
4.2.2 Design parameters 11
4.2.3 Heat flow calculations 11
4.2.4 Flow calculations 14
4.2.5 Chemical attack 14
4.3 Environmental aspects 17
4.3.1 Pollutants dispersion 17
4.3.2 Noise 17
4.3.3 Temperature 17
4.3.4 Fire 17
4.3.5 Gas tightness 17
4.4 Connecting flue pipe 18
4.5 Insulation 18
4.6 Ventilation 19
4.7 Protective coatings 19
4.8 Foundation 20
4.9 Accessories 20
4.9.1 Access 20
4.9.2 Lightning protection 21
4.9.3 Aircraft warning system 21
4.9.4 Additional accessories 21

5 Performance requirements: Structural design 22
5.1 Basic design principles 22
5.2 Actions 23
5.2.1 General 23
5.2.2 Permanent actions 23
5.2.3 Variable actions 23
5.2.4 Accidental actions 25
5.3 Imperfections 25
5.4 Foundation 26
5.5 Liner 26

6 Site activities 26

7 Lifetime management, monitoring, inspection, maintenance, cleaning, repair and remedial work including the reporting; operations and actions required 26

8 Instrumentation 26

Annex A (normative) Gas flow calculation 28

A.1 Principal features of the method of calculation 28
A.2 Parameters related to construction type 28
A.2.1 Roughness 28
A.2.2 Thermal resistance 28
A.3 Basic values for the calculation 29
A.3.1 Air temperature 29
A.3.2 Outside air pressure 29
A.3.3 Flue gas 29
A.3.4 Gas constant 30
A.3.5 Density of outside air 31
A.3.6 Specific heat capacity 31
A.3.7 Correction factor for temperature 31
A.3.8 Flow safety coefficient 32
A.4 Determination of temperatures 32
A.4.1 Flue gas temperatures 32
A.4.2 Coefficient of cooling 32
A.4.3 Heat transmission coefficient 33
A.4.4 Internal heat transfer coefficient 33
A.5 Density of flue gas 35
A.6 Flue gas velocity 35
A.7 Pressure at entry of flue gas into chimney 35
A.7.1 Calculation of pressure 35
A.7.2 Theoretical draught available due to chimney effect 36
A.7.3 Pressure resistance of the flue gas carrying tube 36
A.7.4 Flue friction coefficient 36
A.7.5 Individual resistance coefficient 37
A.7.6 Change in pressure due to change of velocity 37
A.7.7 Pressure caused by sudden interruption of the flue gas stream (Implosion) 37
A.8 Minimum velocity 38

Annex B (informative) Calculation method for combined flue gases with different temperatures 43

Bibliography 46