

DIN EN 13084-1:2007-05 (E)

Free-standing chimneys - Part 1: General requirements

Contents		Page
Foreword		4
1	Scope	5
2	Normative references	5
3	Terms and definitions	6
4	Performance requirements; general design	8
4.1	Materials	8
4.2	Flue gas considerations	8
4.2.1	General	8
4.2.2	Design parameters	8
4.2.3	Heat flow calculations	9
4.2.4	Flow calculations	11
4.2.5	Chemical attack	11
4.3	Environmental aspects	13
4.3.1	Noise	13
4.3.2	Temperature	13
4.3.3	Protection against falling ice	14
4.3.4	Gas tightness	14
4.4	Insulation	14
4.5	Ventilation	15
4.6	Protective coatings	15
4.7	Foundation	15
4.8	Accessories	15
4.8.1	Access	15
4.8.2	Lightning protection	16
4.8.3	Aircraft warning system	16
4.8.4	Additional accessories	17
5	Performance requirements: Structural design	17
5.1	Basic design principles	17
5.2	Actions	18
5.2.1	General	18
5.2.2	Permanent actions	18
5.2.3	Variable actions	18
5.2.4	Accidental actions	20
5.3	Imperfections	21
5.4	Foundation	21
5.5	Liner	21
6	Site activities	21
7	Inspection and maintenance	22
8	Instrumentation	22
Annex A (normative)	Gas flow calculation	23
A.1	Principal features of the method of calculation	23
A.2	Parameters related to construction type	23

A.2.1	Roughness	23
A.2.2	Thermal resistance	23
A.3	Basic values for the calculation	24
A.3.1	Air temperature	24
A.3.2	Outside air pressure	24
A.3.3	Flue gas	24
A.3.4	Gas constant	25
A.3.5	Density of outside air	26
A.3.6	Specific heat capacity	26
A.3.7	Correction factor for temperature	26
A.3.8	Flow safety coefficient	26
A.4	Determination of temperatures	27
A.4.1	Flue gas temperatures	27
A.4.2	Coefficient of cooling	27
A.4.3	Heat transmission coefficient	27
A.4.4	Internal heat transfer coefficient	28
A.5	Density of flue gas	29
A.6	Flue gas velocity	29
A.7	Pressure at entry of flue gas into chimney	30
A.7.1	Calculation of pressure	30
A.7.2	Theoretical draught available due to chimney effect	30
A.7.3	Pressure resistance of the flue gas carrying tube	30
A.7.4	Flue friction coefficient	31
A.7.5	Individual resistance coefficient	31
A.7.6	Change in pressure due to change of velocity	31
A.7.7	Pressure caused by sudden interruption of the flue gas stream (Implosion)	31
A.8	Minimum velocity	32
Annex B (informative) Site activities		37
B.1	Execution	37
B.2	Programming and coordination of works	37
B.3	Site safety	37
B.4	Local conditions	38
Bibliography		39