

Chimneys — Requirements for metal chimneys —

Part 1: System chimney products

The European Standard EN 1856-1:2003, incorporating amendment A1:2006, has the status of a British Standard

ICS 91.060.40

National foreword

This British Standard is the official English language version of EN 1856-1:2003, including Amendment A1:2006.

The start and finish of text introduced or altered by amendment is indicated in the text by **A1** **A1**. Tags indicating changes to CEN text carry the number of CEN amendment. For example, text altered by CEN amendment A1 is indicated in the text by **A1** **A1**.

EN 1856-1:2003 is a candidate “harmonized” European Standard and fully takes into account the requirements of the European Commission mandate M/105, *Chimneys*, given under the EU Construction Products Directive (89/106/EEC), and intended to lead to CE marking. The date of applicability of EN 1856-1:2003 as a harmonized European Standard, i.e. the date after which this standard may be used for CE marking purposes, is subject to an announcement in the *Official Journal of the European Communities*.

The Commission in consultation with Member States have agreed a transition period for the co-existence of harmonized European Standards and their corresponding national standard(s). It is intended that this period will comprise a period, usually nine months, after the date of availability of the European Standard, during which any required changes to national regulations are to be made, followed by a further period, usually of 12 months, for the implementation of CE marking. At the end of this co-existence period, the national standard(s) listed below will be either partially superseded or withdrawn, as indicated.

EN 1856-1:2003 is the subject of transitional arrangements agreed under the Commission mandate. In the UK, the corresponding national standards are:

- BS 715:1993, *Specification for metal flue pipes, fittings, terminals and accessories for gas-fired appliances with a rated input not exceeding 60 kW*;
- BS 4543-2:1990, *Factory-made insulated chimneys — Specification for chimneys with stainless steel flue linings for use with solid fuel fixed appliances*;
- BS 4543-3:1990, *Factory-made insulated chimneys — Specification for chimneys with stainless steel flue linings for use with oil fired appliances*;

and based on this transition period of twenty-one months, BS 715:1993 will be partially superseded by BS EN 1856-1:2003¹⁾, and BS 4543-2:1990 and BS 4543-3:1990 will be withdrawn, in March 2005.

A revised BS 715 is to be published in 2005. All requirements and recommendations relating to chimneys are to be removed from BS 715:1993 in the course of the revision, leaving only requirements relating to flue boxes.

Clauses **NA.1** to **NA.4** of National annex NA (informative) identify the material specification previously required in BS 4543-2:1990, BS 4543-3:1990 and BS 715:1993 for chimneys. Clause **NA.5** identifies fire-stop recommendations, and Clause **NA.6** provides recommendations for chimney ridge terminals under wind load.

This British Standard, was published under the authority of the Standards Policy and Strategy Committee on 28 November 2003

¹⁾ BS EN 1856-2, upon its publication, will also partially supersede BS 715:1993.

Amendments issued since publication

Amd. No.	Date	Comments
15584 Corrigendum No. 1	21 February 2005	National foreword amended
16307	August 2006	See National foreword

© BSI August 2006

ISBN 0 580 43004 9

The UK participation in its preparation was entrusted by Technical Committee B/506, Chimneys, to Subcommittee B/506/5, Chimneys and their components having inner linings of metal, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 59, eight National annex NA pages, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

English Version

Chimneys - Requirements for metal chimneys - Part 1: System chimney products

Conduits de fumée - Prescriptions pour les conduits de fumée métalliques - Partie 1: Composants de systèmes de conduits de fumée

Abgasanlagen - Anforderungen an Metall-Abgasanlagen - Teil 1: Bauteile für System-Abgasanlagen

This amendment A1 modifies the European Standard EN 1856-1:2003; it was approved by CEN on 17 April 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	page
Foreword	3
Introduction	4
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 Manufacturer's declaration for type test	10
5 Dimensions and tolerances	11
6 Performance requirements	11
6.1 Mechanical resistance and stability	11
6.2 Resistance to fire	12
6.3 Hygiene, health and environment. Gas tightness	12
6.4 Safety in use	13
6.5 Durability	15
7 Product information	17
7.1 Manufacturer's instructions	17
7.2 Minimum information to be included in the manufacturer's documentation and instructions	17
8 Marking	18
8.1 Chimney sections, fittings or terminals	18
8.2 Chimney plate	18
9 Product designation	19
10 Evaluation of conformity	19
10.1 General	19
10.2 Type testing	20
10.3 Factory production control (FPC)	20
Annex A (normative) Corrosion tests	23
Annex B (normative) Choice of size for type test and sampling	43
Annex C (normative) Sampling for factory production control	44
Annex D (normative) Factory production control	47
Annex ZA (informative) Clauses of this European standard addressing the provisions of the EU Construction Products Directive	49
Bibliography	59

Foreword

This document (EN 1856-1:2003) has been prepared by Technical Committee CEN/TC 166, "Chimneys", the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2003, and conflicting national standards shall be withdrawn at the latest by March 2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

Annexes A, B, C and D are normative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Foreword to amendment A1

This document (EN 1856-1:2003/A1:2006) has been prepared by Technical Committee CEN/TC 166 "Chimneys", the secretariat of which is held by UNI.

This Amendment to the European Standard 1856-1:2003 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This European Standard has been prepared to be a harmonised standard to provide means of conforming to the essential requirements of the Construction Products Directive and associated EFTA regulations.

The generic word "chimney", when used in this standard, refers to systems with metallic liner used to convey the products of combustion from any appliance to the outside atmosphere, and thus includes all other terms of common use in the trade, such as: vents, flues, shafts, exhaust systems, ducts, etc.

This standard addresses the durability against corrosion by the use of a minimum material specification for the flue liner as well as an interim solution for testing products for durability against corrosion. Three corrosion resistance tests and their requirements have been adopted from existing corrosion testing being undertaken in various member states (see annex A).

Is intended to review the interim solution within a period of 5 years with the intention to develop a unique test method for durability against corrosion as a final solution.

This standard describes chimney components, from which system chimneys can be assembled as illustrated in Figure 1.

1 Scope

This standard specifies the performance requirements for single- and multi-wall system chimney products with metallic liners (chimney sections, chimney fittings and terminals, including supports) used to convey the products of combustion from appliances to the outside atmosphere. It also specifies the requirements for marking, manufacturer's instructions, product information and evaluation of conformity. Metal liners and metal connecting flue pipes not covered here, are included in prEN 1856-2:1996.

This standard does not apply to structurally independent (free standing or self-supporting) chimneys.

2 Normative references

[A1] The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. **[A1]**

EN 573-3	<i>Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3: Chemical composition.</i>
EN 1443:2003	<i>Chimneys - General requirements.</i>
EN 1859:2000	<i>Chimneys - Metal chimneys - Test methods.</i>
EN 10088-1	<i>Stainless steel - Part 1: List of stainless steels.</i>
prEN 12391	<i>Chimneys - Metal chimneys.</i>
EN 13384-1:2002	<i>Chimneys - Thermal and fluid dynamic calculation methods - Part 1: Chimneys serving one appliance.</i>
EN ISO 3651-2	<i>Determination of resistance to intergranular corrosion of stainless steels. Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels. Corrosion test in media containing sulfuric acid (ISO 3651-2:1998).</i>

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

3.1

appliance outlet

position where the products of combustion exit from the appliance (see Figure 1)

3.2

chimney

structure consisting of a wall or walls enclosing a flue or flues

[EN 1443:2003]

3.3

chimney accessory

chimney component not conveying products of combustion

[EN 1443:2003]

3.4

chimney component

any part of a chimney

[EN 1443:2003]

3.5

chimney designation

shortened description of a specific chimney type, which clearly distinguishes it from any other types

3.6

chimney fitting

chimney component conveying products of combustion except a chimney section (see Figure 1)

[EN 1443:2003]

3.7

chimney section

straight chimney component conveying products of combustion (see Figure 1)

[EN 1443:2003]

3.8

cladding

additional non-structural outer wall around a chimney for protection against heat transfer or weathering, or for decorative purposes (see Figure 1)

[EN 1443:2003]

3.9

connecting flue pipe

component or components connecting the heating appliance outlet and the chimney (see Figure 1)

[EN 1443:2003]

EN 1856-1:2003 (E)

3.10

corrosion load

combination of condensate and corrosion resistance classes necessary for the different operating conditions and types of fuel

3.11

custom built chimney

chimney that is installed or built on-site using a combination of compatible chimney components that may be from one or different sources

[EN 1443:2003]

3.12

design load (DL)

load which a chimney or its components are designed to be subjected to, under normal operating conditions, when installed as per manufacturer's installation instruction

3.13

dry operating condition

condition when a chimney is designed to operate normally with the temperature of the inner surface of the flue liner above the water dew point

[EN 1443:2003]

3.14

enclosure

barrier that, when built around a chimney, will give additional safety in case of fire and can provide additional heat transfer resistance (see Figure 1)

[EN 1443:2003]

3.15

external installation

part of a chimney, which is located outside the building

3.16

flexible pipe

metal liner, or metal connecting flue pipe having a single or double skin construction, designed to bend in any direction without permanent deformation

3.17

flue

passage for conveying the products of combustion to the outside atmosphere (see Figure 1)

[EN 1443:2003]

3.18

flue gas

gaseous portion of the products of combustion conveyed in a flue

[EN 1443:2003]

3.19

flue liner

wall of a chimney consisting of components the surface of which is in contact with products of combustion (see Figure 1)

[EN 1443:2003]

3.20

heating appliances

unit generating products of combustion which need to be conveyed to the outside atmosphere (see Figure 1)

[EN 1443:2003]

3.21

insulation

material or air gap between the flue liner and the outer wall, designed to increase thermal resistance of the chimney (see Figure 1)

3.22

internal installation

part of a chimney, which is located inside a building

3.23

joint

connection between two components (see Figure 1)

[EN 1443:2003]

3.24

manufacturer instructions

product written information which is provided for use by the buyer or installer

3.25

metal chimney

chimney with its flue liner made of metal, which may have additional surrounding structural elements and accessories, as well as insulation

3.26

metal liner

rigid or flexible flue liner made of metal

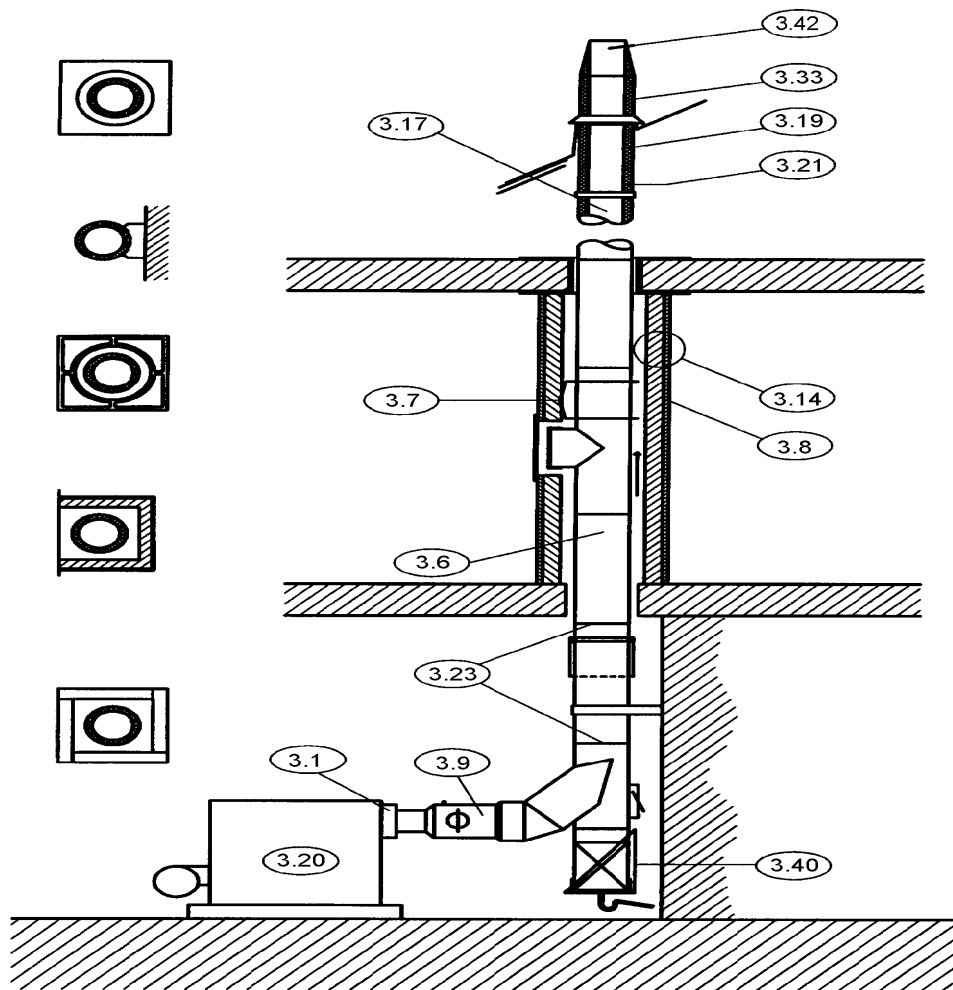


Figure 1 — Terminology. chimney components and chimney accessories

3.27

minimum declared wall thickness

value for the minimum thickness of the liner wall as stated by the manufacturer for the type test

3.28

multi-wall chimney

chimney consisting of a flue liner and at least one additional wall

[EN 1443:2003]

3.29

multi-wall metal chimney

chimney of two walls or more, all made of metal

3.30

negative pressure chimney

chimney designed to operate with the pressure inside the flue less than the pressure outside the flue

[EN 1443:2003]

3.31

nominal size

whole number representing the value of the internal diameter of the flue liner, expressed in millimetres

3.32**non enclosed chimney**

chimney which is installed without any enclosure or cladding

3.33**outer wall**

external wall of a chimney, the surface of which comes in contact with ambient or the external environment, or is within cladding or enclosure (see Figure 1)

[EN 1443:2003]

3.34**positive pressure chimney**

chimney designed to operate with the pressure inside the flue greater than the pressure outside the flue

[EN 1443:2003]

3.35**relining**

process of restoring or replacing the flue liner of a chimney

[EN 1443:2003]

3.36**resistance to fire**

the ability of a chimney to prevent ignition of adjacent combustible material, and to prevent the spread of fire to adjacent areas

3.37**single-wall chimney**

chimney where the flue liner is the chimney

[EN 1443:2003]

3.38**sootfire**

combustion of the flammable residue deposited on the flue liner

[EN 1443:2003]

3.39**structurally independent chimney**

chimney which is not attached to buildings, masts or other support structure

3.40**support**

chimney accessory used to fix, or transfer the load of, chimney components to structural elements (building, mast, etc.) (see Figure 1)

3.41**system chimney**

chimney that is installed using a combination of compatible chimney components, obtained or specified from one manufacturing source with product responsibility for the whole chimney

[EN 1443:2003]

3.42**terminal**

fitting installed at the outlet of a chimney (see Figure 1)

[EN 1443:2003]

3.43

test assembly

complete assembly of all parts necessary to enable the specific performance criteria to be assessed, comprising test chimney, test structures, and measuring equipment (as specified in the test method)

3.44

test chimney

assembly of the chimney components (as specified in the test method), necessary to the assessment of a specific performance criteria of a metal system chimney product

3.45

test structure

assembly of the additional materials (non-chimney components) to enable the test chimney to be assessed for the specific performance criteria

3.46

thermal resistance of a chimney

resistance to heat transfer through the wall or walls of the chimney

[EN 1443:2003]

3.47

wet operating condition

condition when the chimney is designed to operate normally with the temperature of the inner surface of the flue liner at or below the water dew point

[EN 1443:2003]

4 Manufacturer's declaration for type test

The manufacturer shall provide the relevant information from 7.2 and, in addition, shall declare:

- a) the type of metals from which the chimney fittings or sections are made, according to EN 10088-1 and EN 573-3, and the nominal and minimum wall thickness;
- b) the internal diameter of the chimney fittings or sections and the nominal product size;
- c) the minimum wall thickness after manufacture, the installed length, liner external circumference, total mass and design loads of the fitting or section and, if appropriate, the insulation density or mass.

5 Dimensions and tolerances

5.1 The thickness of the material from which the components are made shall be not less than the minimum wall thickness according to 4 a).

5.2 The declared internal diameter of the fitting or section shall be not less than ± 5 mm from the nominal size. The measured internal diameter of the fitting or section shall not be less than the diameter declared by the manufacturer [see 4 b)].

5.3 The external circumference of the liner of the fitting or section shall be within $\begin{matrix} +5 \\ 0 \end{matrix}$ mm up to 600 mm internal diameter and within $\begin{matrix} +13 \\ 0 \end{matrix}$ mm over 600 mm internal diameter, of that declared by the manufacturer [see 4 c)].

5.4 The installed length of a fitting or section (measured on an assembly including at least one joint) shall be within ± 5 mm of that declared by the manufacturer [see 4 c)].

5.5 The density of insulation in a fitting or a section shall be within $\begin{matrix} +30 \\ 0 \end{matrix}$ % of that declared by the manufacturer [see 4 c)].

6 Performance requirements

Unless otherwise stated, performance requirements for fittings shall be the same as those for chimney sections.

6.1 Mechanical resistance and stability

6.1.1 Compressive strength

6.1.1.1 Chimney sections and fittings

The manufacturer shall declare the relevant design loads.

When tested according to the test method described in EN 1859 a multi-wall chimney section or fitting shall withstand a load of at least three times the manufacturer's declared design load.

When tested according to the test method described in EN 1859, single- and multi-wall chimney sections or fittings where the flue liner is load bearing, shall withstand a load of at least four times the manufacturer's declared design load.

6.1.1.2 Chimney support

The manufacturer shall declare the relevant design loads.

When tested according to the test method described in EN 1859, the maximum displacement of the test chimney at the support shall not be greater than 5 mm, in the direction of the load when the manufacturer's declared design load is applied.

The support shall withstand an intensity of loading of at least three times the manufacturer's declared design load.

6.1.2 Tensile strength

The manufacturer shall declare the relevant design loads.

When a chimney section is tested according to the test method of EN 1859, the chimney section shall withstand a load of at least $1,5 \times$ the manufacturer's declared design load.

6.1.3 Lateral strength

6.1.3.1 Non-vertical installation

When a chimney section, declared by the manufacturer as suitable for non-vertical installation, is tested according to the test method described in EN 1859, the deflection of any part of the test chimney shall not be more than 2 mm/m in distance between supports.

6.1.3.2 Components subject to wind load

When chimney components declared by the manufacturer as suitable for external installation are tested according to the test method of EN 1859, the test chimney shall withstand a minimum load of 1,5 kN/m² of projected outer surface area.

6.2 Resistance to fire

The manufacturer shall declare the minimum distance to combustible material and the requirements of 6.4.1 shall be met.

6.2.1 Sootfire resistance

When a chimney made of sections and/or fittings designated as sootfire resistant is tested according to the thermal shock test method described in EN 1859, the maximum surface temperature of combustible materials adjacent to the test chimney, at the distance declared, shall not exceed 100°C when related to an ambient temperature of 20°C and shall meet the gas tightness given in 6.3.

The distance declared shall not exceed the criteria for normal operating conditions.

6.3 Hygiene, health and environment. Gas tightness

When a chimney is tested according to the test methods described in EN 1859, the leakage rate shall not be greater than that given in Table 1, both before and after the thermal performance test at normal operating condition and, where appropriate, the resistance to sootfire test (see annex I of EN 1859:2000).

Table 1 — Leakage rate

Pressure type	Test pressure Pa	Leakage rate/Flue surface area $l \cdot s^{-1} \cdot m^{-2}$
N1	40	< 2,0
P1	200	< 0,006
P2	200	< 0,120
H1	200 and 5 000	< 0,006
H2	200 and 5 000	< 0,120

6.4 Safety in use

6.4.1 Thermal performance at normal operating conditions

When a chimney made of sections and/or fittings is tested according to the heat stress test method described in EN 1859, the maximum surface temperature of combustible materials adjacent to the test chimney, at the distance declared, for the nominal working temperature, shall not be greater than 85°C, when related to an ambient temperature of 20°C and shall meet the gas tightness given in 6.3.

6.4.2 Accidental human contact

Where accidental human contact of a chimney is possible the outer wall surface temperature of the chimney shall not be greater than the appropriate value given in Table 2.

Table 2 — Maximum outer wall surface temperatures

Material of outer wall surface	Maximum allowed temperature °C
Metal-bare	70
Metal-painted	80
Metal-enamelled	86
Metal-plastic covered	90
NOTE The values in Table 2 are based on the criteria in EN 563 relating to a 1 s burn threshold.	

6.4.3 Thermal resistance

The thermal resistance value of the chimney section declared by the manufacturer shall be verified either by testing, according to the test method of EN 1859, or by calculation using either the simplified calculation or the finite difference equation of annexes F and G of EN 1859:2000.

When the value for the thermal resistance is calculated, the thermal conductivity value shall be based on the mean temperature of the insulation depending on the nominal temperature of Table 3.

Table 3 — Temperature levels and test temperatures

Temperature level	Nominal working temperature (T) °C	Flue gas test temperature °C
T 080	≤ 80	100
T 100	≤ 100	120
T 120	≤ 120	150
T 140	≤ 140	170
T 160	≤ 160	190
T 200	≤ 200	250
T 250	≤ 250	300
T 300	≤ 300	350
T 400	≤ 400	500
T 450	≤ 450	550
T 600	≤ 600	700

6.4.4 Water vapour diffusion resistance

When a section or fitting designated for wet operating conditions is tested according to the test method described in EN 1859, the outer surface of the section or fitting shall remain dry and the increase in mass of the section or fitting shall not exceed 1,0 % of the insulating material.

6.4.5 Condensate penetration resistance

When a section or fitting designated for wet operating conditions is tested according to the test method described in EN 1859, the outer surface of the section or fitting shall remain dry and the increase in mass of the section or fitting shall not exceed 1,0 % of the insulating material.

6.4.6 Rainwater penetration resistance

When a section or fitting designated for external installation is tested according to the test method described in EN 1859, the increase in mass of the section or fitting shall not exceed 1,0% of the insulating material.

6.4.7 Flow resistance

6.4.7.1 Chimney sections

The manufacturer shall declare the mean value of roughness for chimney sections, which shall be determined according to the method given in subclause 4.12 of EN 1859:2000 or obtained from data given in EN 13384-1:2002.

6.4.7.2 Chimney fittings

The manufacturer shall declare the coefficient of flow resistance due to a directional and/or cross-sectional and/or mass flow change in the flue for chimney fittings which shall be determined according to the method given in subclause 4.12 of EN 1859:2000 or obtained from data given in EN 13384-1:2002.

6.4.7.3 Terminals

The manufacturer shall declare the coefficient of flow resistance of the terminal which shall be verified according to the test method described in subclause 4.10 of EN 1859:2000.

6.4.8 Other requirements for terminals

6.4.8.1 Rain protection terminals

Where a rain protection terminal is tested for rain water penetration according to the test method described in EN 1859, the mass of the water collected in the flue liner shall not exceed $5 \times 10^{-2} \text{ mm}^3/\text{s}$ per millimetre of flue liner diameter.

6.4.8.2 Aerodynamic behaviour

When a terminal is tested according to the test method described in EN 1859 the static pressure in the terminal P_{static} shall meet the following formula:

$$P_{\text{static}} \leq \Delta P_R - 0,2 \cdot W_L^2$$

where

- ΔP_R is the pressure difference, in Pa, as declared by the manufacturer, between the flue liner and the test room at the internal flow velocity of 1 m/s;
- W_L is the wind speed, in m/s.

For negative pressure chimneys the value ΔP_R shall be 2 Pa maximum.

For positive pressure chimneys the value ΔP_R is the actual value that is measured under the conditions given in subclause 6.4.7.3, by the flow velocity of 2 m/s.

6.5 Durability

6.5.1 Durability of the flue liner against corrosion

Durability against corrosion shall be declared either on the basis of:

- a) material type (according to Table 4) and thickness of the flue liner; or
- b) on the basis of the results of at least one of the three test methods described in normative annex A.

Products which have a declaration on the basis of material type and thickness shall be designated Vm.

Products passing the test described in clause A.1 shall be designated V1.

EN 1856-1:2003 (E)

Products passing the test described in clause A.2 shall be designated V2.

Products passing the test described in clause A.3 shall be designated V3.

The product designation shall, in any case, include the flue liner material specification, according to 6.5.2.

NOTE The link between Vm, V1, V2 and V3 and the allowed use is dependent on individual member states regulations where they exist.

6.5.2 Flue liner material specification

The complete material specification of the flue liner shall be formed by the letter L followed by five digits. The first two digits shall represent the material type as in Table 4 and the last three digits shall represent the material thickness in multiples of the unit 0,01 mm.

EXAMPLE

L40045 represents a liner made of 1.4401 stainless steel with a thickness of 0,45 mm.

Table 4 — Flue liner material specification (according to EN 10088-1 and EN 573-3)

Material type	Material N°	Symbol
10	EN AW – 4047A	EN AW Al Si 12(A) and CU <0,1%, Zn<0,15% (cast aluminium)
11	EN AW – 1200A	EN AW-AL 99,0 (A)
13	EN AW-6060	EN AW-Al MgSi
20	1.4301	X5CrNi 18-10
30	1.4307	X2CrNi 18-9
40	1.4401	X5CrNiMo 17-12-2
50	1.4404 ^a	X2CrNiMo 17-12-2
60	1.4432	X2CrNiMo 17-12-3
70	1.4539	X1NiCrMoCu 25-20-5
^a Equivalent for material N° 1.4404 = 1.4571 (symbol X6CrNiMoTi 17-12-2).		

6.5.3 Freeze-thaw resistance

Metal chimney products are considered deemed to satisfy free freeze-thaw resistance.

7 Product information

7.1 Manufacturer's instructions

The manufacturer's instructions shall be available in the language of each country in which the product is sold.

7.2 Minimum information to be included in the manufacturer's documentation and instructions

The manufacturer shall include in his documentation and instructions the following minimum information:

- manufacturer identification;
 - product designation in accordance with clause 9 and its explanation;
 - material specification;
 - wind load resistance
 - limitations of height location of exposed section of the chimney,
 - maximum distances between lateral supports or guides;
 - compressive strength
 - maximum load,
 - mass and dimensions of chimney components;
 - minimum distance to combustible materials;
 - flow resistance factors of fittings and chimney sections;
 - thermal resistance in $\text{m}^2 \text{K/W}$;
 - flexural strength
 - maximum offset,
 - maximum suspended load from the sections and fittings;
 - dangerous substances;
 - installation drawing typical of the application;
 - method of jointing the components;
 - method of installing sections or fittings, supports and accessories including weatherproofing;
 - instruction on how to complete the data of the chimney plate according to prEN 12391.
- And where appropriate:
- direction of flow;
 - storage instructions;

EN 1856-1:2003 (E)

- method of application of any sealant required;
- individual assembly instructions for any components which are supplied in unassembled conditions;
- minimum distance from chimney outer surface to the inner surface of the enclosure;
- positions of apertures for cleaning and inspection;
- installation of chimney plate to the chimney, cladding or enclosure;
- terminal aerodynamic properties, including pressure drop in no wind condition;
- need for human contact shielding (based on outer surface temperature test results);
- enclosure/cladding/specification/limitation;
- other material specifications (e.g. seals);
- specific methods or instruments for cleaning;

NOTE 1 The normal method of cleaning is by the use of a brush which should not be made of black steel.

- recommendations on condensate drainage.

NOTE 2 The product information required in this clause must not be confused with those relevant for CE marking (see clause ZA.3 of annex ZA for this purpose).

8 Marking

NOTE For CE marking and labelling purposes the provisions of clause ZA.3 of annex ZA apply.

8.1 Chimney sections, fittings or terminals

Chimney sections, fittings or terminals shall be marked with the following information:

- a) product designation in accordance with clause 9;
- b) name or trademark of the manufacturer;
- c) manufacturing batch or product reference of manufacturer;
- d) arrow indicating direction of flue gases (if applicable).

8.2 Chimney plate

The manufacturer shall make available a chimney plate made of a durable material which shall include the following information:

- a) name or trademark of the manufacturer, engraved or indelibly marked;
- b) space for designation in accordance with EN 1443;
- c) space for nominal size;
- d) space for minimum distance to combustible material, indicated in millimetres, followed by the symbol of an arrow and a flame;
- e) space for installer data and date of installation.