



SLOVENSKI STANDARD
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Dimovodne naprave - Oprema - 4. del: Dimovodne lopute - Zahteve in preskusne metode

Chimneys - Accessories - Part 4: Flue dampers - Requirements and test methods

Abgasanlagen - Zubehörteile - Teil 4: Abgasklappen - Anforderungen und Prüfverfahren

Conduits de fumée - Accessoires - Partie 4: Clapets de gaz de fumées - Exigences et méthodes d'essai

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Chimneys - Accessories - Part 4: Flue dampers - Requirements and test methods

Conduits de fumée - Accessoires - Partie 4 : Clapets de
fumées - Exigences et méthodes d'essai

Abgasanlagen - Zubehörteile - Teil 4: Abgasklappen -
Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 24 February 2020.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN 16475-4:2020) has been prepared by Technical Committee CEN/TC 166 “Chimneys”, the secretariat of which is held by ASI.

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of an identical text or by endorsement, at the latest by October 2020, and conflicting national standards shall be withdrawn at the latest by January 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document forms a part of the series of standards EN 16475, Chimneys – Accessories, comprising the following parts:

- *Part 1: Silencers — Requirements and test methods;*
- *Part 2: Chimney fans — Requirements and test methods;*
- *Part 3: Draught regulators, standstill opening devices and combined secondary air devices — Requirements and test methods;*
- *Part 4: Flue dampers — Requirements and test methods (this part);*
- *Part 6: Access components — Requirements and test methods;*
- *Part 7: Rain caps — Requirements and test methods.*

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

EN 16475-4:2020 (E)**Introduction**

The main purpose of flue dampers is to close or partially close a flue.

Flue dampers can be manually adjusted, sited in connecting flue pipes or chimneys, in order to reduce the burning rate (solid fuel stoves/fireplaces) or to work as a shut-off slide preventing back flow of soot during cleaning of the chimney, or mechanically driven for reducing/closing the flue, in order to reduce the stand-by losses or to prevent the backflow of the flue gas e.g. in case of multi-served chimneys.

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1 Scope

This document specifies the characteristics and test methods for flue dampers that are used as components, carrying flue gas, in order to limit the flow in a chimney or to prevent back flow of soot during cleaning of the chimney or to prevent the backflow of the flue gas e.g. in case of multi-served chimneys.

This document covers only flue dampers incorporated in a housing and installed inside a building.

This document covers only flue dampers with sealings made of elastomeric materials for temperature classes up to T 200 and corrosion class 1 or 2 in accordance with EN 14241-1 or sealing materials for dry applications with a fire reaction class A1 in accordance with EN 13501-1.

This document covers only flue dampers with motor drive, casing and flue damper plate which are interlocked in such a way that they can only be separated by using tools.

This document covers only mechanical flue dampers where any motor is in accordance with EN 60730-2-14 and the cover for electrical components of the flue damper fulfils minimum protection class IP40 according to EN 60529.

This document covers only flue dampers which are designed and installed to ensure that incorrect information about the position of the flue damper flap are absolutely impossible, which are only installed on components that are interlocked to the casing, which are only activated by components that are interlocked to the flue damper flap and where it is ensured that the limit switch opens or the flue damper flap moves to the open position if one of these interlocks fails. This safety target may also be achieved with an equally suitable method (e.g. bracing or welding).

This document covers only flue dampers for biomass boilers $\geq 1\,000$ kW and industrial applications with limit switches in accordance with EN 61058-1 or EN 50156-1.

This document covers only flue dampers where it is possible to identify the position of the flue damper flap.

This document covers only totally closed, manually driven flue dampers (type 1) which have a facility to adjust the position of the flue damper flap.

This document covers only totally closed, mechanically driven flue dampers (type 2) with only the positions "fully opened" and "fully closed" and where it is not possible to fix the flap in the non-closed position during the flue damper flap stays in closed position while the appliance is not working.

NOTE This applies only to multi-appliance installations with positive pressure conditions.

This document covers only partially closed flue dampers (type 3 to 5) where it is possible to adjust the position of the flue damper flap and where it is ensured that the flue damper flap does not change position by itself.

Flue dampers which are integral parts of system chimney products or other chimney components, e.g. flue liners, connecting flue pipes, are not covered by this document.

This document also specifies the provisions for marking, manufacturers' instruction, product information, Assessment and Verification of Constancy of Performance (AVCP).

This document does not specify issues for electrical parts.

EN 16475-4:2020 (E)**2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1443:2019, *Chimneys — General requirements*

EN 1561, *Founding — Grey cast irons*

EN 1563, *Founding — Spheroidal graphite cast irons*

EN 1856-1, *Chimneys — Requirements for metal chimneys — Part 1: System chimney products*

EN 1856-2:2009, *Chimneys — Requirements for metal chimneys — Part 2: Metal flue liners and connecting flue pipes*

EN 13384-1, *Chimneys — Thermal and fluid dynamic calculation methods — Part 1: Chimneys serving one heating appliance*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1443, EN 1856-1 and EN 1856-2 and the following apply.

- IEC Electropedia: available at <http://www.electropedia.org/>
<https://standards.iteh.ai/catalog/standards/sist/7d181482-9e87-458a-a69d->
- ISO Online browsing platform: available at <https://www.iso.org/obp/ui>

3.1**flue damper**

device used to close or partially close the flue, comprising a rotating or sliding flue damper flap, including fastening elements, in a flue damper housing that may be a section of connecting flue pipe or a section of chimney (single or multi wall)

Note 1 to entry: Examples given in Annex D.

3.2**shut-off slide****flue damper type 1**

flue damper which is intended to prevent the escape of dust out of the chimney during sweeping the chimney

3.3**internal leakage rate**

leakage rate inside the flue caused by the closed flap

3.4

external leakage rate

leakage rate from the inside of the component to the outside atmosphere

Note 1 to entry: Corresponds to the leakage rate of EN 1443:2019, Table 3.

4 Product characteristics

4.1 General

4.1.1 Introduction

In order to identify the characteristics of the flue damper the following product properties shall be declared:

4.1.2 Temperature classes

The temperature class shall be declared in accordance with EN 1443:2019, Table 1.

4.1.3 Pressure classes

The pressure class shall be in accordance with EN 1443:2019, Table 3.

4.1.4 Condensate resistance classes

The condensate resistance class shall be in accordance with EN 1443:2019, 4.2.3.

4.1.5 Corrosion resistance classes

Corrosion resistance classes shall be in accordance with EN 1443:2019, Table 4.

4.1.6 Sootfire resistance classes

Sootfire resistance class shall be in accordance with EN 1443:2019, 4.2.5.

4.1.7 Distance to combustible material

The minimum allowed distance of the outer wall of the flue damper to walls and floors comprising combustible material shall be expressed as “xx”, where “xx” is the value in whole millimetres, followed with a letter “a” to “l” in accordance with EN 1443:2019, 4.2.6.

4.1.8 Flue damper type

The flue damper type shall be in accordance with Table 1.

Table 1 — Flue damper types

Flue damper type	Type description	Condensate resistance class		Pressure class		Field of application
		D	W	N	P/M/H	
1	Totally closed manually driven	X	—	X	—	Solid fuel manually fed without fan
2	Totally closed mechanically driven	X	X	X	X	All applications except solid fuel manually fed without fan
3	Partially adjustable manually driven ^a	X	—	X	—	Solid fuel manually fed without fan
4	Partially adjustable mechanically driven	X	X	X	X	All applications except solid fuel manually fed without fan
5	Partially fixed manually driven	X	X	X	X	All applications except solid fuel manually fed without fan

^a opening according to national regulations or manufacturer's instructions or other standards (e.g. EN 16510-1)

NOTE 'X' means 'applies to this flue damper type'.

4.2 Safety in the case of fire

4.2.1 Reaction to fire

The reaction to fire indicates the degree of contribution of the material to the behaviour of the construction product in the event of fire. When tested in accordance to the test methods given in EN 13501-1, relevant for the claimed class, the test results are expressed as a class according to EN 13501-1.

Whether products covered by this document are made from one or more of the materials that have been considered, under established conditions, as belonging to the category “No contribution to fire” because of their low level of combustibility, the reaction to fire class A1 applies to these products without the need of carrying out reaction to fire tests.

4.2.2 Fire resistance internal to external

Fire resistance internal to external is the capability of the flue damper to prevent a fire at adjacent combustible materials caused by the chimney operation under:

- normal operating condition for the declared temperature class (see 4.1.2) and pressure class (see 4.1.3), and
- sootfire condition for products declared sootfire-resistant (G) or sootfire safe (As) (see 4.1.6),

taking into account the minimum allowed distance to combustible material (xx) in relation to the test assembly corresponding to the walls and floors of a variety of building types and the thermal resistance of their structure (see 4.1.7).

When tested according to the test method described in 5.3.3.2:

- the external gas tightness shall comply with 4.3.1 before and after the test;
- the maximum temperature of adjacent combustible materials shall not exceed 85 °C when related to an ambient temperature of 20 °C at the distance declared by the manufacturer when tested at the declared temperature class.

When tested according to the test method described in 5.3.3.3:

- the external gas tightness shall comply with 4.3.1 before and after the test;
- the maximum temperature of adjacent combustible materials shall not exceed 100 °C when related to an ambient temperature of 20 °C at the distance declared by the manufacturer.

4.3 Hygiene, health and environment

4.3.1 External gas tightness

The external gas tightness is the capability of the flue damper to limit the leakage rate to the room where flue damper is located appropriate to the designated pressure class (see 4.1.3).

When tested in accordance with the test method described in 5.4.1 the leakage rate in litres/seconds per square meter of the inner flue surface area of the flue damper before and after any test shall not exceed the values given in EN 1443:2019, Table 3. The inner flue surface area is calculated with the nominal diameter of the flue damper. If the joint is a part of elements of the flue damper, the tests are made with joints.

4.3.2 Internal gas tightness

The internal gas tightness is the capability of the flue damper to limit the leakage rate inside the flue damper from one side of the flap to the other side.

When flue damper type 1 or 2 tested in accordance with the test method described in 5.4.2 both before and after the thermal performance tests the internal leakage rate under the specific test pressure shall not exceed the maximum leakage rate in Table 3.

For flue damper type 2 the leakage rate can be determined according to EN 15502-2-1 at a test pressure of 100 Pa where the maximum leakage rate is 0,2 m³/h for all diameters as additional information.