
**Razširjena uporaba rezultatov preskusov požarne odpornosti - Nenosilne stene -
5. del: Konstrukcije iz kovinskih sendvič panelov**

Extended application of results from fire resistance tests - Non-loadbearing walls - Part
5: Metal sandwich panel construction

Erweiterter Anwendungsbereich der Ergebnisse von Feuerwiderstandsprüfungen -
Nichttragende Wände - Teil 5: Sandwichelemente in Metallbauweise

Application étendue des résultats d'essais de résistance au feu - Murs non porteurs -
Partie 5 : Panneaux sandwichés métalliques pour la construction

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Extended application of results from fire resistance tests - Non-loadbearing walls - Part 5: Metal sandwich panel construction

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (prEN 15254-5:2024) has been prepared by Technical Committee CEN/TC 127 “Fire safety in buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

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This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

This series is currently composed of the following parts:

- EN 15254-2, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 2: Masonry and Gypsum Blocks;*
- EN 15254-4, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 4: Glazed constructions;*
- EN 15254-5, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 5: Metal sandwich panel construction;*
- EN 15254-6, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 6: Curtain walling;*
- EN 15254-7, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 7: Non-load bearing sandwich panels — Ceilings.*

[oSIST prEN 15254-5:2025](https://standards.iteh.ai/catalog/standards/sist/4f655078-ee00-48bc-ab0e-e405abfa40e5/osist-pren-15254-5-2025)

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prEN 15254-5:2024 (E)**1 Scope**

This document defines rules for extended applications, provides guidance, and, where appropriate, defines procedures, for variations of certain parameters and factors associated with the design of internal and external non-loadbearing walls constructed of metal sandwich panels and that have been tested in accordance with EN 1364-1, which could generate a classification in accordance with EN 13501-2.

EN 15254-5 applies for double skin metal faced sandwich panels having an insulating core bonded to both facings as defined in EN 14509 not stabilizing a whole building or parts of it.

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 1363-1, *Fire resistance tests — Part 1: General Requirements*

EN 1363-2, *Fire resistance tests — Part 2: Alternative and additional procedures*

EN 1364-1, *Fire resistance tests for non-loadbearing elements — Part 1: Walls*

EN 1993-1-2, *Eurocode 3: Design of steel structures — Part 1-2: General rules — Structural fire design*

EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 14509:2013, *Self-supporting double skin metal faced insulating panels — Factory made products - Specifications*

EN 15725, *Extended application reports on the fire performance of construction products and building elements*

EN ISO 13943, *Fire safety — Vocabulary (ISO 13943)*

prEN 14509-3:2024, *Factory-made double skin metal faced insulating sandwich panels - Part 3: Test methods for determining mechanical strength, building physical behaviour and durability*

3 Terms and definitions, symbols and abbreviations**3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 14509, EN 15725, EN 1364-1, EN 1363-1 and EN ISO 13943 the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1.1

direct field of application of test results

outcome of a process (involving the application of defined rules) whereby a test result is deemed to be equally valid for variations in one or more of the product properties and/or intended end-use applications

3.1.2

extended field of application of test results

outcome of a process (involving the application of defined rules that can incorporate calculation procedures) that predicts, for a variation of a product property and/or its intended end-use application(s), a test result on the basis of one or more test results to the same test standard

3.1.3

factor

variation that can be applied to a parameter, e.g. a change in the core thickness

3.1.4

factor influence

potential cause of a change in the fire resistance when the factor is changed, e.g. an increase in fire resistance as result of an increase of the thickness of the core

3.1.5

fastening

fixing

component that fastens the panels to a support structure or to the test frame

3.1.6

fixing system

system consisting of fastenings and possible other means to fasten the panels to a support structure or to the test frame

3.1.7

height of assembly

height of the wall in the reference test or in the end-use application for horizontally or vertically installed wall panels

3.1.8

length of assembly

length of the wall in the reference test or in the end-use application for horizontally or vertically installed wall panels

3.1.9

reference test

fire resistance test in accordance with EN 1363-1 and EN 1364-1, and where applicable EN 1363-2, on which the extended application is based and the results of which are used as the main source of data for the extended application

3.1.10

stitching

component for fixing panels to panels in the longitudinal joint

prEN 15254-5:2024 (E)**3.1.11****span length**

centre to centre distance between the supports of a panel and/or intermediate supports to which the sandwich panel is fixed

3.1.12**support structure**

construction onto which the panel wall is fastened in the end-use application

3.1.13**test frame**

frame containing the test construction for the purpose of mounting onto the furnace

3.2 Symbols and abbreviations

For the purposes of this document, the following symbols and abbreviations apply.

E	étanchéité
F	load
$F_{t,Ed}$	the tensile load on the fasteners
$F_{v,Ed}$	the shear load on the fasteners
$F_{t,Rd}$	the design tensile load on the fastener at normal temperature
$F_{v,Rd}$	the design shear load on the fastener at normal temperature
I	isolation
L	span length
L_1	distance between midspan of two adjacent panels
L_2	overlap of the metal facing at the panel to panel joint
PCS	gross calorific potential
R	resistance, loadbearing capacity
b	width of panel
c_1	opening in adjacent metal sheet joints at normal room temperature on unexposed side
c_2	opening in adjacent metal sheet joints during the reference test on unexposed side
d_c	depth of core
f_j	deflection of panel to panel joint in the reference test (deflection into the furnace to be taken as positive)
f_1, f_2	deflection of two adjacent panels at midspan in the reference test (deflection into the furnace to be taken as positive)
g	panel weight per square meter
k	yield strength factor
n	number of fasteners
q	pressure action on the panel in a fire situation
Δc	relative increase in opening of the metal sheet joint in the reference test
Δf	relative deflection of the joint compared to the adjacent panels in the reference test (to be calculated taking into account the positive and negative directions of the deflections)

4 Establishing the field of extended application

4.1 General

An extended application analysis is required when the application differs in one or more parameters from the tested one described in the test report and/or in the classification document, and which is not covered by the direct field of application of the classification document.

Extended application is a prediction of the expected fire resistance of fire-resistant metal faced sandwich panels. It may be based on interpolation between or extrapolation from test data. The fundamental consideration shall be that the fire-resistant metal faced sandwich panels after extension would achieve the required fire performance if it were to be tested according to EN 1364-1.

The extended application of test results from metal faced sandwich panels used as a non-loadbearing wall shall be based on the reference fire test results performed according to EN 1364-1 and may be complemented by one or more additional tests. The general rules in EN 15725 shall be followed.

The necessary information for extrapolation of test results shall be assessed during the sampling and testing as specified in prEN 14509-3:2024, 13.5.1.

4.2 Assumptions in the extended application

The following assumptions are considered when evaluating extended applications for sandwich panels:

- a) the wall is required to provide fire resistance in the end-use condition; relevant classes are given in EN 13501-2;
- b) the wall is assumed to be exposed on the entire face of one side to the standardized heating conditions given in the EN 1363-1 fire resistance test specification or to alternative and additional procedures given in the EN 1363-2;
- c) the structure above and below the wall does not deflect vertically during the fire exposure period; this simulates the non-deflecting nature of the test frame which forms part of the furnace test apparatus;

In reality constructions deflect and this should be taken into account by the building designer when designing the building and planning the constructional details so that no vertical loads are applied to the wall.

- d) after delamination of the fire-exposed facing the dead load of the sandwich panels is carried by a support structure to which the ends of the sandwich panels are attached;
- e) the support structure has at least the same loadbearing capacity, R , of the resistance to fire performance as the sandwich panel wall regarding integrity;
- f) the self-weight of the facing and core is calculated from the volume and density of the materials;
- g) the calculation of the reduction in the strength properties of steel at elevated temperature shall be in accordance with EN 1993-1-2.

5 Rules for extended applications of the tested product/construction

5.1 General

When performing extended applications for a tested wall changes can occur either in the materials and/or in the construction. Both are dealt with in this document. Table 1 and Table 2 list the changes which may or may not be made in an extended application assessment. The rules for the changes are given in 5.2 and 5.3.

Table 1 — Material changes relevant to extended application

Parameter	Factors	Factor influence on performance		Rules
		Integrity E	Insulation I	
Changes in metal facings	Chemical composition of coating	influence	no influence ^a	5.2.2.1
	Change of colour	influence	influence	5.2.2.1
	Change between coated and non-coated metal	influence	influence	5.2.2.1
	Sheet thickness	influence	no influence ^a	Allowed up to $\pm 0,2$ mm of tested thickness.
	Change from one metal to another	no information	no information	5.2.2.2
	Change in sheet geometry	no information	no information	5.2.2.3
Changes in adhesive	Amount	influence	influence	5.2.3
	Type	influence	no influence ^a	5.2.3
Changes in core material	Type	major influence	major influence	5.2.4
	Change in composition.	major influence	major influence	5.2.4.2 - 5.2.4.6
^a It is understood that when a change in a factor can influence the integrity of a joint, there is a possibility that a change in the leakage of hot gases or in joint geometry can also influence the temperature rise near the joint and therefore influence the insulation rating.				