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Evaluation Report to European Technical Assessment

ETA 25/0302 – version 01 of 31/03/2025

Trade name of the construction product:	SIPKON panels
Product family to which the construction product belongs:	Product are code: 14 WOOD BASED PANELS AND ELEMENTS
Manufacturer:	SIPKON s.r.o. Rastislavova 12 949 01 Nitra Slovak Republic
Manufacturing plant:	SIPKON s.r.o. Rastislavova 12 949 01 Nitra Slovak Republic
This Evaluation Report contains:	9 pages
This Evaluation Report replaces:	—

Introduction

This report describes the methods used to assess the fitness for the intended use of the Structural insulated panels “SIPKON panels” introduced by SIPKON s.r.o., Rastislavova 12, 949 01 Nitra, Slovak Republic, in accordance with the essential requirements specified in Chapter 2 of EAD 140022-00-0304: November 2018, Prefabricated wood-based loadbearing stressed skin panels (hereinafter EAD 140022-00-0304).

This evaluation report includes data or references to data in ETA 25/0302 – version 1 (hereinafter ETA), taken from assessments and tests reports carried out in accordance with the EAD 140022-00-0304. List of assessments and test reports is given in Annex 1.

1 Technical description of the product

See ETA, Chapter 1.

1.1 Intended use

See ETA, Clause 2.1.

1.2 Intended working life of the construction product

See ETA, Clause 2.2.

2 Performance of the product and references to the methods used for its assessment

2.1 Mechanical resistance and stability

The load-bearing capacities of panels, used as walls, floors and roofs, are given in ETA, Annex 2, Tables 3, 4, 5, 6 and 7. Panels and their components are described in ETA, Annex 1. Materials and components specifications are given in ETA, Annex 4.

Mechanical resistance and stability of panels were assessed on the basis of calculation results as given in calculation reports [4] to [23] according to EAD 140022-00-0304, EN 1990, relevant parts of EN 1991, EN 1995-1-1. Bonding quality of OSB/3 skins and gypsum fibreboard skins to insulation core was checked by testing [24] and [26] according to EAD 140022-00-0304, clause 3.4.1. Mechanical parameters of EPS are according to EAD 140022-00-0304, annex A6. Strength class of timber members is C24 according to EN 338.

Verified segments have a width of 1 250 mm. The wall, floor and roof load-bearing structures consist of glued sandwich panels. Skin is made from plates of OSB/3 or gypsum fibre board. Core is made from EPS. The skin is integral. The core is glued to the sheath, limiting the plate buckling of skin. Height of wall panel is up to 3 000 mm and width is up to 1 250 mm for floor and roof. When verifying, the panel was considered as prefabricated wood-based loadbearing stressed skin panel. The load-bearing structure is stressed according to the static diagrams, figures 1, 2 and 3. The modification factor k_{mod} was considered in service class 1 (ceiling, floor) and service class 2 (wall, roof) according to Table 3.1 in STN EN 1995.

Parameters of OSB/3 skin, gypsum fibre board skin and core of panels are given in tables 1, 2 and 3.

Possible onsite gluing is checked and assessed in Structural and stress analysis reports [4] to [23] by reducing the design properties of corresponding glued lines to 70% taking into account panels connections details given in ETA Annex 1.

Table 1 – Oriented strand board – OSB/3 characteristics (major axis)

Strength	$f_{m,k}$ (MPa)	$f_{t,k}$ (MPa)	-	$f_{c,k}$ (MPa)	$f_{v,k}$ (MPa)
Edgewise	9,4	9,4	-	15,4	6,8
Flatwise	16,4	-	-	10,0	-
Modulus of elasticity	$E_{0,mean}$ (MPa)	$E_{0,05}$ (MPa)	G_{mean} (MPa)	$G_{0,mean}$ (MPa)	$G_{0,05}$ (MPa)
Edgewise	3 800	3 230	1 080	-	918
Flatwise	4 930	-	-	50	-
Characteristic density	ρ_k = 550 kg/m^{-3}				
Partial safety factor	γ_M = 1,20				
Modification factor	k_{mod} = 0,55 (medium term); k_{mod} = 0,70 (short term); for walls, roofs k_{mod} = 0,70 (medium term); for floors				
Deformation factor	k_{def} = 1,50 (floors) k_{def} = 2,25 (walls, roofs)				

Table 2 – Gypsum fibre board characteristics, (major axis)

Strength	$f_{m,k}$ (MPa)	$f_{t,k}$ (MPa)	-	$f_{c,k}$ (MPa)	$f_{v,k}$ (MPa)
Edgewise	4,2	2,4	-	8,5	3,6
Flatwise	4,4	-	-	7,3	-
Modulus of elasticity	$E_{0,mean}$ (MPa)	-	G_{mean} (MPa)	$G_{0,mean}$ (MPa)	-
Edgewise	3 800	-	800	-	-
Flatwise	3 800	-	-	1 600	-
Density	ρ_{mean} = 1 150 kg/m^{-3}				
Partial safety factor	γ_M = 1,30				
Modification factor	k_{mod} = 0,45 (medium term); k_{mod} = 0,60 (short term); for walls, roofs k_{mod} = 0,60 (medium term); for floors				
Deformation factor	k_{def} = 3,00 (floors) k_{def} = 4,00 (walls, roofs)				

Table 3 – EPS 100 characteristics

Strength	$f_{t,k}$ (MPa)	$f_{v,k}$ (MPa)	$f_{c,k}$ (MPa)	$f_{v,k,glue}$ (MPa)
	0,150	0,075	0,100	0,075
Modulus of elasticity	$E_{0,mean}$ (MPa)	-	G_{mean} (MPa)	-
	6	-	2,73	-
Partial safety factor	γ_M = 1,50			
Modification factor	k_{mod} = 0,75 (medium term); k_{mod} = 1,00 (short term)			
Deformation factor	k_{def} = 7,00			

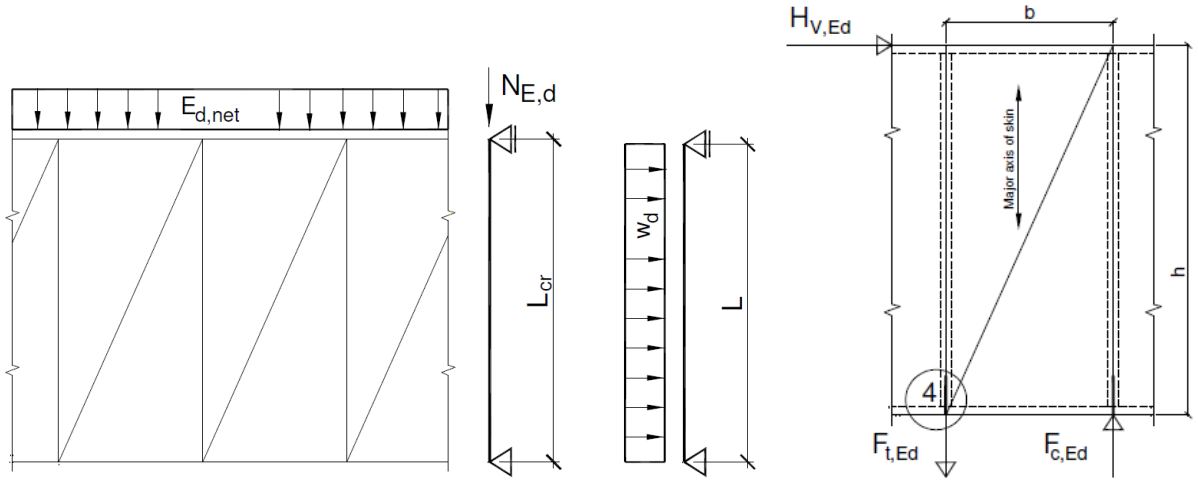

Figure 1 – Static arrangement for wall

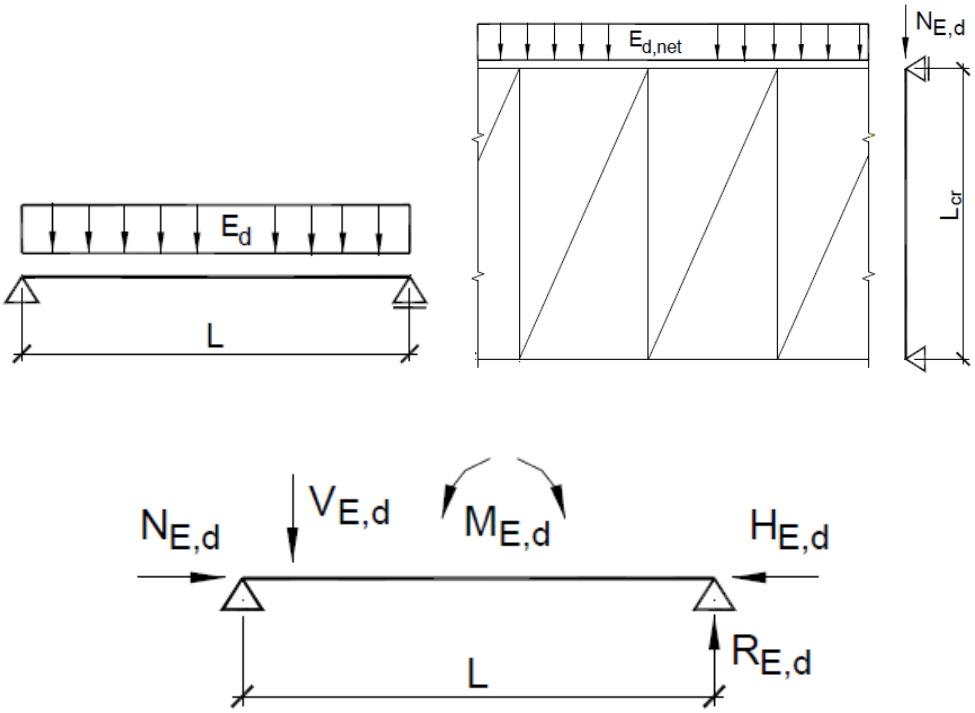

Figure 2– Static arrangement for floor, ceiling

Dimensions in mm

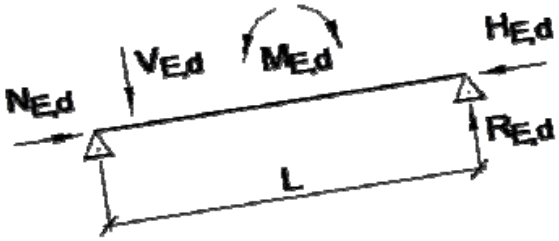

Figure 3 – Static arrangement for roof

The mechanical properties, design load-carrying capacities for the wall, floor and roof panels are given in ETA, Annex 2, tables 3, 4, 5, 6 and 7. Tables in ETA contain service ability limit state assessment and stiffness of the system. These values were assessed according to EN 1995-1-1, with regard to requirement for avoiding unacceptable bowing and deflections of loadbearing stressed skin panels.

2.2 Resistance to concentrated loads

No performance assessed.

2.3 Density of the components

Characteristic values of the density of the components are given in ETA, Annex 4, Table 9.

2.4 Creep and duration of the load

See ETA clause 3.1.8 and Annex 2, Table 3 up to Table 7.

2.5 Dimensional stability

Production tolerances of the SIPKON panels are given in ETA Annex 1. Production tolerances of SIPKON panels were checked by testing [27] according to STN EN 324-1.
No performance assessed for swelling and shrinkage.

2.6 Reaction to fire of materials and components

The assessment of reaction to fire of materials of panels is based on Commission Decisions, harmonised standards and available ETAs. The classification of reaction to fire according to EN 13501-1 is given in ETA, Annex 4, Table 9 with reference to the related Commission Decision. Materials and components used in panels are classified without need of further testing.

2.7 Resistance to fire

No performance assessed.

2.8 Content, emission and/or release of dangerous substances

Formaldehyde emission of OSB boards and wood-based products is classified as E1. Content of Pentachlorphenol (PCP) is less than 5 ppm in these components. Chemically treated wood-based components with fire retardants or wood preservatives are not part of the kits.

No performance assessed for identified intended release scenarios for the kits and intended use with respect to dangerous substances:

- IA2: Product with indirect contact to indoor air (e.g. covered products) but possible impact on indoor air.

2.9 Vapour permeability and moisture resistance

The water vapour resistance factors μ (-) of the SIP panel components are given in ETA Annex 4, Table 9 according to EN ISO 10456.

2.10 Impact resistance

No performance assessed.

2.11 Airborne sound insulation

No performance assessed.

2.12 Impact sound insulation

No performance assessed.

2.13 Sound absorption

No performance assessed.

2.14 Thermal conductivity

Heat transfer resistance R and thermal transmittance U were determined for building elements by calculation [25] according to EN ISO 6946. Thermal bridges were taken into account.

Design value of thermal conductivity of loadbearing timber components λ = 0,130 W/(m·K) was used in calculations according to EN ISO 10456.

Design value of thermal conductivity of expanded polystyrene (EPS) λ = 0,039 W/(m·K) was used in calculations.

Design value of thermal conductivity of gypsum fibre board λ = 0,320 W/(m·K) was used in calculations.

Design value of thermal conductivity of OSB/3 boards λ = 0,130 W/(m·K) was used in calculations according to EN ISO 10456.

Design values of thermal conductivity according to EN ISO 10456 were used for other materials.

Materials properties are given in ETA, Annex 4, Table 9. The heat transfer resistance *R* and thermal transmittance *U* of panels are given in ETA, Annex 3, Table 8.

2.15 Air permeability

No performance assessed.

2.16 Thermal inertia

No performance assessed.

2.17 Natural durability

The durability of panels was assessed for use class 1 and 2 according to EN 1995-1-1 and EN 335. The OSB/3 components and skin should meet requirements according to EN 300 and EN 13986. No preservatives are used in panels to increase durability of panels or components. Requirement for corrosion protection of mechanical fasteners is given in ETA, Annex 4, Table 14 in accordance with EN 1995-1-1.

2.18 Serviceability and identification

Aspects of serviceability are dealt with in the Clause 2.1.

The identification parameters and references to products specification for identifying the materials and components of panels are given in ETA, Annex 4, Table 9.

3 Calculations, assessments and classification reports of panels

Calculations, assessments and classification reports of panels listed in Annex 1 are deposited at TSÚS. They are sent to other EOTA bodies only on request. In this case these results must be handled in strict confidence.

Annexes

Annex 1 Reference list

Annex 1

Reference list

[1] EAD 140022-00-0304 Prefabricated wood-based loadbearing stressed skin panels, Edition November 2018 (supersedes: ETAG 019 Guideline for European technical approval for prefabricated wood-based loadbearing stressed skin panels, Edition November 2004)

[2] Regulation (CE) 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

[3] EOTA TR 034: General ER 3 Checklist for ETAGs/CUAPs/ETAs – Content and/or release of dangerous substances in products/kits, edition March 2012

[4] Structural and stress analysis, Outer wall Gluestream (Skin GFB-Fermacell) Rib C24, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 07. 06. 2022

[5] Structural and stress analysis, Outer wall Gluestream (Skin OSB/3) Rib C24, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 07. 06. 2022

[6] Structural and stress analysis, Outer wall Gluestream (Skin GFB-Fermacell) SIP spline joint, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 17. 06. 2022

[7] Structural and stress analysis, Outer wall Gluestream (Skin OSB/3) SIP spline joint, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 14. 06. 2022

[8] Structural and stress analysis, Floor Panel Gluestream (Skin GFB-Fermacell) Rib C24, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 09. 06. 2022

[9] Structural and stress analysis, Floor Panel Gluestream (Skin OSB/3) Rib C24, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 07. 06. 2022

[10] Structural and stress analysis, Floor Panel Gluestream (Skin GFB Fermacell) SIP spline joint, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 17. 06. 2022

[11] Structural and stress analysis, Floor Panel Gluestream (Skin OSB/3) SIP spline joint, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 15. 06. 2022

[12] Structural and stress analysis, Roof Panel Gluestream (Skin GFB) Rib C24, Slope a = 0°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 13. 06. 2022

[13] Structural and stress analysis, Roof Panel Gluestream (Skin GFB) Rib C24, Slope a = 15°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 15. 06. 2022

[14] Structural and stress analysis, Roof Panel Gluestream (Skin GFB) Rib C24, Slope a = 30°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 15. 06. 2022

[15] Structural and stress analysis, Roof Panel Gluestream (Skin OSB/3) Rib C24, Slope a = 0°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 17. 06. 2022

[16] Structural and stress analysis, Roof Panel Gluestream (Skin OSB/3) Rib C24, Slope a = 15°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 17. 06. 2022

[17] Structural and stress analysis, Roof Panel Gluestream (Skin OSB/3) Rib C24, Slope a = 30°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 17. 06. 2022

[18] Structural and stress analysis, Roof Panel Gluestream (Skin GFB Fermacell) SIP spline joint, Slope a = 0°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 16. 06. 2022

[19] Structural and stress analysis, Roof Panel Gluestream (Skin GFB Fermacell) SIP spline joint, Slope a = 15°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 16. 06. 2022

[20] Structural and stress analysis, Roof Panel Gluestream (Skin GFB Fermacell) SIP spline joint, Slope a = 30°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 16. 06. 2022

[21] Structural and stress analysis, Roof Panel Gluestream (Skin OSB/3) SIP spline joint, Slope a = 0°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 16. 06. 2022

[22] Structural and stress analysis, Roof Panel Gluestream (Skin OSB/3) SIP spline joint, Slope a = 15°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 16. 06. 2022

[23] Structural and stress analysis, Roof Panel Gluestream (Skin OSB/3) SIP spline joint, Slope a = 30°, prepared by: Ing. Roman Soyka, PhD., authorized building engineer – specialization: mechanical stability and resistance of buildings; Zvolen, Slovak Republic, 16. 06. 2022

[24] Test Report No. 50-25-0010 – Shear strength of glue lines (bonding quality). Issued by: Technický a skúšobný ústav stavebný, n. o., laboratory branch in Zvolen, Slovak Republic, 14. 02. 2025

[25] Report No 50/058/09/22 – Calculationand assessment of thermal resistance and thermal transmittance according to EN ISO 6946. Issued by: Technický a skúšobný ústav stavebný, n. o., Branch Zvolen, Slovak Republic, 19. 09. 2022

[26] Test Report No. 50-25-0009 – Shear strength of glue lines (bonding quality). Issued by: Technický a skúšobný ústav stavebný, n. o., laboratory branch in Zvolen, Slovak Republic, 14. 02. 2025

[27] Test Report No. 50-25-0011 – Dimensional accuracy of boards. Issued by: Technický a skúšobný ústav stavebný, n. o., laboratory branch in Zvolen, Slovak Republic, 14. 02. 2025

[28] EN 300 Oriented Strand Boards (OSB). Definitions, classification and specifications

[29] EN 335 Durability of wood and wood-based products. Use classes: definitions, application to solid wood and wood-based products

[30] EN 350 Durability of wood and wood-based products. Testing and classification of the durability to biological agents of wood and wood-based materials

[31] EN 460 Durability of wood and wood-based products. Natural durability of solid wood. Guide to the durability requirements for wood to be used in hazard classes

[32] EN 1990 Eurocode. Basis of structural design

[33] EN 1991-1-1 Eurocode 1. Actions on structures. Part 1-1: General actions. Densities, selfweight, imposed loads for buildings

[34] EN 1991-1-3 Eurocode 1. Actions on structures. Part 1-3: General actions. Snow loads

[35] EN 1991-1-4 Eurocode 1. Actions on structures. Part 1-4: General actions. Wind actions

[36] EN 1995-1-1 Eurocode 5. Design of timber structures. Part 1-1: General. Common rules and rules for buildings

[37] EN 13163 Thermal insulation products for buildings. Factory made expanded polystyrene (EPS) products. Specification

[38] EN 13501-1 Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests

[39] EN 13986 Wood-based panels for use in construction. Characteristics, evaluation of conformity and marking

[40] EN 14080 Timber structures. Glued laminated timber and glued solid timber. Requirements

[41] EN 14081-1 Timber structures. Strength graded structural timber with rectangular cross section. Part 1: General requirements

[42] EN 15283-2 Gypsum boards with fibrous reinforcement - Definitions, requirements and test methods - Part 2: Gypsum fibre boards

[43] EN 15425 Adhesives - One component polyurethane (PUR) for load-bearing timber structures - Classification and performance requirements

[44] EN 15497 Structural finger jointed solid timber. Performance requirements and minimum production requirements

[45] EN ISO 6946 Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods

[46] EN ISO 10456 Building materials and products. Hygrothermal properties. Tabulated design values and procedures for determining declared and design thermal values

[47] Control and test plan for ETA SIPKON panels, SIPKON, s.r.o., 20.02.2025

Zvolen 31 March 2025
Prepared by: Ing. Daniel Bebej, PhD.