REACTION TO FIRE EXTENDED APPLICATION REPORT
FIRES-ER-016-17-NURE Edition 2

Cement-bonded particleboard CETRIS® / CETRIS®INCOL / CETRIS® AKUSTIC

REACTION TO FIRE
EXTENDED APPLICATION REPORT

FIRES-ER-016-17-NURE
Edition 2

Name of the product:	Cement-bonded particleboard CETRIS® / CETRIS®INCOL / CETRIS® AKUSTIC
Sponsor:	CIDEM Hranice, a.s. Skalní č. 1088 Hranice I – Město 753 01 Hranice Czech Republic
Prepared by:	FIRES, s.r.o. Approved Body No. SK01 Osloboditeľov 282 059 35 Batizovce Slovak Republic
Task No.:	PR-20-0329 (PR-17-0079)
Date of issue:	17. 09. 2020 (12. 04. 2017)
Reports:	2
Copy No.:	2

Distribution list:

Copy No. 1	FIRES, s. r. o., Osloboditeľov 282, 059 35 Batizovce, Slovak Republic
Copy No. 2	CIDEM Hranice, a.s., Skalní č. 1088, Hranice I – Město, 753 01 Hranice, Czech Republic

This report includes accreditation mark SNAS with additional mark ILAC-MRA. SNAS is signatory of ILAC-MRA, Mutual recognition agreement (of accreditation), which is focused on promoting of international acceptance of accredited laboratory data and reducing technical barriers to trade, such as the retesting of products on markets of signatories. More information about ILAC-MRA is on www.ilac.org. Signatories of ILAC-MRA are e.g. SNAS (Slovakia), CAI (Czech Republic), PCA (Poland), DakkS (Germany) or BMWA (Austria). Up to date list of ILAC-MRA signatories is on http://ilac.org/ilac-mra-and-signatories/. FIRES, s.r.o. Batizovce is full member of EGOLF also, more information www.egolf.org.uk.

FIRES, s.r.o., Osloboditeľov 282, 059 35 Batizovce, Slovak Republic
tel. 00421 52 285 1611, www.fires.sk
Notified Body No. 1396, Approved Body No. SK01, Member of EGOLF

1. INTRODUCTION

This extended application report concerns test results obtained in accordance with test methods:

- EN 13823: 2002 - Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by single burning item;
- EN ISO 1716: 2003 - Reaction to fire tests for building products. Determination of the heat of combustion.

The extended application process also applies rules as defined in the following product standard:

- CEN/TS 15117: 2005 – Guidance on direct and extended application.

This document is 2nd edition of reaction to fire extended application report No. FIRES-ER-016-17-NURE, issued by FIRES, s.r.o., Batizovce on 12. 04. 2017. In to 2nd edition was added new cement-bonded particle board CETRIS® INCOL. The justification is stated out in clause 4 of this document. This edition of the document supersedes previous editions of reaction to fire extended application report.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, Cement-bonded particleboard CETRIS® / CETRIS® INCOL, is used in vertical and horizontal building constructions, non-loadbearing walls and partitions, cladding of walls, shaft walls, exterior loadbearing and non-loadbearing walls, floor systems, hollow core floors, cladding of timber and steel constructions in order to increase fire resistance, as membrane of suspended ceiling according to EN 13964, and Cement-bonded particleboard CETRIS® AKUSTIC is used as acoustic cladding of walls and ceilings, which is fixed to the steel supporting construction with a layer of mineral wool.

2.2 PRODUCT DESCRIPTION

2.2.1 TESTED PRODUCT DESCRIPTION

Product, Cement-bonded particleboard CETRIS®, was tested in four phases.

Testing phase No. 1

Following components, Suspended ceiling CETRIS®, were tested in compliance with EN 1716:

- DENASIL Z: area density (140 – 160) g/m^2 (in wet state) [4];
- DENASIL RAL 7035: area density (130 – 300) g/m^2 (in wet state) [5];
- DENASIL RAL 8016: area density (130 – 300) g/m^2 (in wet state) [6];
- DENAPOL NCS 2030-B90G: area density (140 – 200) g/m^2 (in wet state) [7];
- DOLOMIT: base coat DELTAKRYL Z2, area density (75 – 100) g/m^2 (in wet state) [8];
  coat DELTAKRYL Z2, area density (300 – 350) g/m^2 (in wet state);
  marble brash SAXOGRAN, area density (3000 – 3500) g/m^2 (in wet state),
  varnish AK, area density (200 – 230) g/m^2 (in wet state).

  Note: Manufacturer of coat and varnish DENASIL Z, DENAPOL is DENAS COLOR a.s., Bílovec, Czech Republic. Supplier of individual layers of surface treatment of the board CETRIS DOLOMIT is STOMIX s r.o., Czech Republic;
- CTD CETRIS: board without surface treatment, bulk density: 1350 kg/m^3 [3];

Following components, Suspended ceiling CETRIS®, were tested in compliance with EN 13823:

- CTD CETRIS: board without surface treatment, thickness 8 mm, bulk density: 1350 kg/m^3 [1];
- CTD CETRIS: board without surface treatment, thickness 40 mm, bulk density: 1350 kg/m^3 [2];

Following representative specimens were tested in compliance with EN 13823:

- cement-bonded particleboards CETRIS, 10 mm thick with surface treatment DOLOMIT, fixed to timber loadbearing construction, without cavity (mineral wool was used), gaps in joints are sealed by mastic DEXAFLAMM-R [9];
- cement-bonded particleboards CETRIS, 10 mm thick with surface treatment DOLOMIT, fixed to timber timber loadbearing construction, with cavity (without mineral wool), gaps in joints are sealed by mastic DEXAFLAMM-R [10];
- cement-bonded particleboards CETRIS, 10 mm thick with surface treatment DOLOMIT, fixed to timber loadbearing construction, with cavity (without mineral wool), gaps in joints are not sealed by mastic [11].

Testing phase No. 2

Following representative specimens Cement-bonded acoustic particleboards CETRIS® AKUSTIC were tested in compliance with EN 13823 [12]:

- cement-bonded acoustic particleboards CETRIS® AKUSTIC, 8 mm thick, with openings with 12 mm diameter evenly distributed on the whole surface in distance 32 mm, with surface treatment FINISH, gaps of joints were not sealed by mastic,

  Surface treatment – smooth surface:
  - base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on side edges of board;
  - top coat DENASIL RAL 8017, area density (130 – 300) g/m^2 (in wet state), applied on obverse side of board and on side edges of board;
- used mineral wool ORSIK (manufacturer: Saint Gobain Orsil, s.r.o.Czech Republic) placed behind boards CERTIS, thickness 40 mm, bulk density 22 kg.m^{-3}:
- supporting construction is made of steel galvanized profiles (60 x 27 x 06) mm, screws distance 300 mm, mineral wool ORSIK was inserted between beams.

Testing phase No. 3

Following components of surface treatments were tested in compliance with EN 1716:

- CTD CETRIS® Basic: board without surface treatment, bulk density: 1350 kg/m^3 [16];
- Waterstop: water resistant coat for surface treatment of seamy side, area density 0,100 kg/m^2 [17];
- plaster EPOXY-β-2: epoxide water resistant glue used as base for marble brash on obverse side, area density 0,200 kg/m^2 [18];
- marble brash: area density 2,5 – 3 kg/m^2, grain 3 mm thick [19].

Testing phase No. 4 (2010 – change of coatings supplier, instead of DENAS COLOR a.s. – BTA Industry a.s.)

Following components of surface treatments were tested in compliance with EN 1716:

- BTAitop 1000A/CRT: base coat, area density (240 – 300) g/m^2 (in wet state) [13];
- BTAitop 1000A/CTS: top coat, area density (160 – 200) g/m^2 (in wet state) [14];
- BTAitop 1000A/CTS-lazura: scumble varnish, area density (160 – 200) g/m^2 (in wet state) [15];

Testing phase No. 5 (2017 – modification of coatings composition, adding of 2K coating BTAi EP 3000 AB)

Following components of surface treatments were tested in compliance with EN 1716:

- BTAi EP 3000 AB: base coat, area density (110 – 130) g/m^2 (in wet state) [20];

Testing phase No. 6

Following representative specimens Cement-bonded particleboards CETRIS® INCOL was tested in compliance with EN ISO 1716 [21]:

- cement-bonded particleboards CETRIS® INCOL, 12 mm thick, with a smooth surface, coloured with black pigment dispersed in the mass of the board. The board is made by pressing a mixture of wood chips (63 % vol.), Portland cement (25 % vol.) water (10 % vol.) and hydrating ingredients (2 % vol.). Total amount of black pigment REMEI Rebacolor 1351 schwarz (manufacturer: Remei CZ, s.r.o.) is 6,5 % vol. (4,6 % by weight). The average bulk density of the board is 1400 kg/m^3.

2.2.2 CLASSIFIED PRODUCT DESCRIPTION

Cement-bonded particleboard CETRIS® / CETRIS®INCOL consists of timber mass, cement, water, hydrating ingredients and surface treatment. There are openings with diameter of 12 mm drilled in the board in case of type CETRIS® AKUSTIC. These openings are evenly distributed on the whole surface in distance 32 mm.

Content of individual components in case of boards CETRIS® (volume %):
- timber mass 60 %;
- cement 22 %;
- water 15 %;
- hydrating ingredients 3 %.

Board thickness: 8 mm - 40 mm.
Bulk density: 1350 kg/m^3.

Content of individual components in case of boards CETRIS® INCOL (volume %):
- timber mass 59 %;
- cement 24 %;
- liquid pigment 5 %
- water 10 %;
- hydrating ingredients 2 %.

Thickness of boards: 12 mm;
Bulk density: 1400 kg/m^3.

All boards CETRIS® / CETRIS® AKUSTIC 12 mm thick can be replaced with board CETRIS® INCOL.

Cement-bonded particleboard CETRIS®/CETRIS® INCOL are produced with following surface treatments:

Table No. 1

BASIC	smooth surface, without surface treatment
PROFIL	relief surface, without surface treatment;
AKUSTIC	smooth surface, evenly drilled openings;
PLUS	smooth surface, with surface treatment: • base coat BTAitop 1000A/CRT, area density (140 – 220) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight;
PROFIL PLUS	relief surface, with surface treatment: • base coat BTAitop 1000A/CRT, area density (140 – 220) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight;
FINISH	smooth surface, with surface treatment: • base coat BTAitop 1000A/CRT, area density (200 – 250) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight; • base coat BTAi EP 3000 AB, area density (110 – 130) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 56% by weight; • top coat BTAitop 1000A/CTS, area density (160 – 200) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight;
FINISH PROFIL	relief obverse side, with surface treatment: • base coat BTAitop 1000A/CRT, area density (200 – 250) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight; • base coat BTAi EP 3000 AB, area density (110 – 130) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 56% by weight; • top coat BTAitop 1000A/CTS, area density (160 – 200) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight;
AKUSTIC FINISH	smooth surface, evenly drilled openings, with surface treatment: • base coat BTAitop 1000A/CRT, area density (200 – 250) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight; • base coat BTAi EP 3000 AB, area density (110 – 130) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 56% by weight; • top coat BTAitop 1000A/CTS, area density (160 – 200) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight;
LASUR	smooth surface, with surface treatment: • base coat BTAitop 1000A/CRT, area density (200 – 250) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight; • base coat BTAi EP 3000 AB, area density (110 – 130) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 56% by weight; • scumble varnish BTAitop 1000A/CTS-lazura, area density (160 – 200) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 38 % by weight;

PROFIL LASUR	relief obverse side, with surface treatment: • base coat BTAitop 1000A/CRT, area density (200 – 250) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight; • base coat BTAi EP 3000 AB, area density (110 – 130) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 56% by weight; • scumble varnish BTAitop 1000A/CTS-lazura, area density (160 – 200) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 38% by weight;
LASIN	smooth grinded surface, with surface treatment: • base coat BTAitop 1000A/CRT, area density (200 – 250) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight; • base coat BTAi EP 3000 AB, area density (110 – 130) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 56% by weight; • scumble varnish BTAitop 1000A/CTS-lazura, area density (160 – 200) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 38 % by weight;
AKUSTIC LASIN	smooth grinded surface, evenly drilled openings, with surface treatment: • base coat BTAitop 1000A/CRT, area density (200 – 250) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 52% by weight; • base coat BTAi EP 3000 AB, area density (110 – 130) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 56% by weight; • top coat BTAitop 1000A/CTS-lazura, area density (160 – 200) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board, dry matter content min. 38 % by weight;
DOLOMIT NEW	smooth surface, with surface treatment: surface treatment on obverse side of board: • coat Waterstop, water resistant coat for surface treatment of seamy side, area density 0,100 kg/m^2; • epoxide plaster EPOXY-β-2 water resistant glue used as base for marble brash on obverse side, area density 0,200 kg/m^2 • marble brash, area density 2,5 – 3 kg/m^2, grain 3 mm thick;

Note: Manufacturer of coats and varnish BTAitop 1000A/CRT, BTAitop 1000A/CTS, BTAitop 1000A/CTS-lazura and BTAi EP 3000 is BTA Industry a.s., K velké Ohradě 776, 155 00 Praha 5, Czech Republic. Manufacturer of individual components of surface treatment DOLOMIT NEW is UAB "Vilsoplat", Titnago g. 19, 023 00 Vilnius, Lithuania.

Cement-bonded particleboards are fixed to the supporting construction (timber or steel) by steel screws placed in spacing max. 300 mm.

Boards CETRIS® AKUSTIC are fixed to supporting construction made of steel galvanized profiles (60 x 27 x 0,6) mm, by means of steel screws (Ø 4,2 x 25) mm placed in spacing max. 300 mm.

Layer of insulating material (building construction without cavity), e.g. mineral wool Orsil HARDSIL, Orsil N (manufacturer SAINT-GOBAIN ORSIL s.r.o. Častolovice, Czech Republic) or other type of mineral wool with bulk density min. 60 kg/m^3 and reaction to fire class A1 may be applied to CETRIS® / CETRIS® INCOL boards or building constructions are produced with cavity (without insulation).

Layer of insulating material, e.g. mineral wool with bulk density min. 22 kg/m^3 and reaction to fire class min. A2-s1, d0 is applied to CETRIS® AKUSTIC boards from the inside of the construction.

Joints of cement-bonded particleboards CETRIS® / CETRIS® INCOL are without mastic or with mastic DEXAFLAMM-R (manufacturer: TORA, spol. s r.o., Czech Republic).

Suspended ceilings

Supporting construction of suspended ceiling according to EN 13964 is made of profiles CD (60 x 27 x 0,6) mm, loadbearing and assembling. Maximal spacing between loadbearing CD profiles is 960 mm. Maximal spacing between assembling CD profiles is 420 mm. Assembling profiles are fixed to loadbearing profiles by cross coupling. Loadbearing profiles are fixed to roof by means of straight hinges. Type of CD profile, cross coupling and straight hinge is of KNAUF, type D 112 (supplier KNAUF Praha, s.r.o., Czech Republic) ceiling construction. Material of CD profiles, suspension and fixation elements – steel of class min. DX 51D+Z according to EN 10142, with a continuous metal layer, applied in hot state Z100 according to EN 10327.

There are 5 mm wide dilatation gaps between boards, which are sealed by mastic DEXAFLAMM-R (manufacturer TORA Spytihněv spol. s r.o., Czech Republic). Boards CETRIS® / CETRIS® INCOL are fixed to loadbearing construction by means of screws (Φ4,2 x 35) mm or (Φ3,9 x 30) mm placed in spacing max. 300 mm. Screw heads are sealed by mastic DEXAFLAMM-R (manufacturer TORA Spytihněv spol. s r.o., Czech Republic).

40 mm thick insulating layer made of mineral wool (according to table No. 2) is inserted between CD profiles of supporting construction. Second layer of mineral wool (according to table No. 2), 40 mm thick is placed on first mineral wool layer. Upper layer of mineral wool is rotated 90°, so the joints are overlapped.

Table No. 2

Product variant A)	Orsil HARDSIL with bulk density 60 kg.m^{-3} (manufacturer SAINT-GOBAIN ORSIL s.r.o. Častolovice, Czech Republic)
Product variant B)	Orsil N with bulk density 100 kg.m^{-3} (manufacturer SAINT-GOBAIN ORSIL s.r.o. Častolovice, Czech Republic)

3. TEST REPORTS AND TEST RESULTS USED FOR THIS EXTENDED APPLICATION REPORT

3.1 TEST REPORTS

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[1]	Centrum stavebního inženýrství, a.s., CZ	CIDEM Hranice, a.s., CZ	12198 – 1/3	14. 07. 2004	ČSN EN 13823
[2]	IBS – Institut für Brandschutztechnik und sicherheitsforschung gesellshaft m.b.H., Austria	CIDEM Hranice, a.s., CZ	06012017	10. 07. 2006	ÖNORM EN 13823: 2002
[3]		VPG Verbundsysteme GmbH	05062707-1	-	ÖNORM EN ISO 1716: 2002
[4]	PTEU MV SR, Slovak Republic	CIDEM Hranice, a.s., CZ	172/2006	07. 12. 2006	STN EN ISO 1716: 2003
[5]			173/2006	07. 12. 2006	
[6]			174/2006	08. 12. 2006	
[7]			175/2006	08. 12. 2006	
[8]			176/2006	06. 12. 2006	
[9]	FIRES, s.r.o., Slovak Republic		FIRES-RF-017-07-AUNS	28. 02. 2007	STN EN 13823: 2003
[10]			FIRES-RF-018-07-AUNS	28. 02. 2007	

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[11]	FIRES, s.r.o., Slovak Republic	CIDEM Hranice, a.s., CZ	FIRES-RF-019-07-AUNS	01. 03. 2007	STN EN 13823: 2003
[12]			FIRES-RF-104-07-AUNS	04. 12. 2007	
[13]	PTEU MV SR, Slovak Republic	CIDEM Hranice, a.s., Czech Republic	59/2010	30. 06. 2010	STN EN ISO 1716: 2003
[14]			60/2010	01. 07. 2010	
[15]			61/2010	02. 07. 2010	
[16]			23/2008	05. 03. 2008	
[17]			24/2008	10. 03. 2008	
[18]			25/2008	06. 03. 2008	
[19]			26/2006	06. 03. 2006	
[20]			26/2017	08. 03. 2017	STN EN ISO 1716: 2010
[21]			95/2020	30. 07. 2020	STN EN ISO 1716: 2019

[1] – [21] Test specimens were conditioned according to EN 13238 before the reaction to fire test

3.2 TEST RESULTS

Test report number and test method	Characteristic value	Number of tests	Results	
			Continuous parameter - mean (m)	Compliance with parameters
[1] ČSN EN 13823 CTD CETRIS without surface treatment, 8 mm thick	$FIGRA_{0,2MJ}$ $FIGRA_{0,4MJ}$ LFS<edge of specimen THR_{600s}	3	9,3 9,3 (-) 1,2	(-) (-) compliant (-)
	SMOGRA (m^2/s^2) TSP600s (m^2)		0,0 8,8	(-) (-)
	flaming droplets/particles		occurrence flaming ≤ 10 s flaming >10 s	non-compliant (-) (-)
[2] ÖNORM EN 13823 CTD CETRIS without surface treatment, 40 mm thick	$FIGRA_{0,2MJ}$ $FIGRA_{0,4MJ}$ LFS<edge of specimen THR_{600s}	3	1,7 1,7 (-) 0,7	(-) (-) compliant (-)
	SMOGRA (m^2/s^2) TSP600s (m^2)		0,0 16,6	(-) (-)
	flaming droplets/particles		occurrence flaming ≤ 10 s flaming >10 s	non-compliant (-) (-)
[3] ÖNORM EN ISO 1716 CTD CETRIS without surface treatment	PCS (MJ/kg)	3	2,29	(-)

Test report number and test method	Characteristic value	Number of tests	Results	
			Continuous parameter - mean (m)	Compliance with parameters
[4] STN EN ISO 1716 DENASIL Z	PCS (MJ/kg)	3	13,597 ± 0,046	(-)
[5] STN EN ISO 1716 DENASIL RAL 7035	PCS (MJ/kg)	3	16,253 ± 0,144	(-)
[6] STN EN ISO 1716 DENASIL RAL 8016	PCS (MJ/kg)	3	16,740 ± 0,071	(-)
[7] STN EN ISO 1716 DENAPOL NCS 2030-B90G	PCS (MJ/kg)	3	28,413 ± 0,099	(-)
[8] STN EN ISO 1716 DOLOMIT	PCS (MJ/kg)	3	1,631 ± 0,184	(-)
[9] STN EN 13823 CTD CETRIS with surface treatment DOLOMIT, 10 mm thick, with mineral wool, gaps sealed by mastic DEXAFLAMM-R	$FIGRA_{0,2MJ}$ $FIGRA_{0,4MJ}$ LFS<edge of specimen THR_{600s}	3	22,3 22,3 (-) 2,4	(-) (-) compliant (-)
	SMOGRA (m^2/s^2) TSP600s (m^2)		0,0 12,0	(-) (-)
	flaming droplets/particles		occurrence flaming ≤ 10 s flaming >10 s	non-compliant (-) (-)
[10] STN EN 13823 CTD CETRIS with surface treatment DOLOMIT, 10 mm thick, with cavity, gaps sealed by mastic DEXAFLAMM-R	$FIGRA_{0,2MJ}$ $FIGRA_{0,4MJ}$ LFS<edge of specimen THR_{600s}	3	17,8 17,1 (-) 1,8	(-) (-) compliant (-)
	SMOGRA (m^2/s^2) TSP600s (m^2)		0,0 16,6	(-) (-)
	flaming droplets/particles		occurrence flaming ≤ 10 s flaming >10 s	non-compliant (-) (-)
[11] STN EN 13823 CTD CETRIS with surface treatment DOLOMIT, 10 mm thick, with cavity, gaps without mastic	$FIGRA_{0,2MJ}$ $FIGRA_{0,4MJ}$ LFS<edge of specimen THR_{600s}	3	15,6 15,6 (-) 1,5	(-) (-) compliant (-)
	SMOGRA (m^2/s^2) TSP600s (m^2)		0,0 13,3	(-) (-)
	flaming droplets/particles		occurrence flaming ≤ 10 s flaming >10 s	non-compliant (-) (-)
[12]	$FIGRA_{0,2MJ}$	3	13,6	(-)

Test report number and test method	Characteristic value	Number of tests	Results	
			Continuous parameter - mean (m)	Compliance with parameters
STN EN 13823 Cement-bonded acoustic particleboard CETRIS® AKUSTIC with surface treatment FINISH, 8 mm thick	$FIGRA_{0,4MJ}$ LFS<edge of specimen THR_{600s}		13,6 (-) 1,9	(-) compliant (-)
	SMOGRA (m^2/s^2) TSP600s (m^2)		0,0 14,2	(-) (-)
	flaming droplets/particles		occurrence flaming ≤ 10 s flaming >10 s	non-compliant (-) (-)
[13] STN EN ISO 1716 base coat BTAitop 1000A/CRT	PCS (MJ/kg)	3	14,051 ± 0,074	(-)
[14] STN EN ISO 1716 top coat BTAitop 1000A/CRT	PCS (MJ/kg)	3	14,331 ± 0,081	(-)
[15] STN EN ISO 1716 scumble varnish BTAitop 1000A/CTS-lazura	PCS (MJ/kg)	3	15,871 ± 0,080	(-)
[16] STN EN ISO 1716 base board CETRIS® Basic	PCS (MJ/kg)	3	1,744 ± 0,138	(-)
[17] STN EN ISO 1716 coat Waterstop	PCS (MJ/kg)	3	16,891 ± 0,068	(-)
[18] STN EN ISO 1716 Epoxide plaster EPOXY-ß-2	PCS (MJ/kg)	3	14,755 ± 0,037	(-)
[19] STN EN ISO 1716 marble brash	PCS (MJ/kg)	3	-0,129 ± 0,047	(-)
[20] STN EN ISO 1716 CTD CETRIS without surface treatment, 8 mm thick	PCS (MJ/kg)	3	17,951 ± 0,057	(-)

Test report number and test method	Characteristic value	Number of tests	Results	
			Continuous parameter - mean (m)	Compliance with parameters
[21] STN EN ISO 1716 CETRIS® INCOL without surface treatment	PCS (MJ/kg)	3	17,951 ± 0,057	(-)

4. EXTENDED APPLICATION

4.1 PRINCIPLES APPLIED FOR THE EXTENSION OF THE FIELD OF APPLICATION

This extended application procedure is based on performing additional tests and selection of representative specimens for the entire product family according to the rules set out in CEN / TS 15117: 2005.

4.2 PROCEDURE

Testing phase No. 1

In order to state reaction to fire class on the basis of results of tests in compliance with EN ISO 1716 and EN 13823 it was necessary to select representative specimens, which would cover construction of suspended ceiling according to 2.2.2 and following combinations of products with cement-bonded particleboards:

1) without surface treatment;
2) with surface treatment according to table No. 3;
3) without cavity;
4) with cavity;
5) timber loadbearing construction;
6) steel loadbearing construction;
7) gaps in joints not sealed by mastic;
8) gaps in joints sealed by mastic.

Detailed information about surface treatment is stated in following table:

Table No. 3

BASIC	smooth surface, without surface treatment;
PROFIL	relief surface, without surface treatment;
PLUS	smooth surface, with surface treatment: • base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board;
PROFIL PLUS	relief surface, with surface treatment: • base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board;
FINISH	smooth surface, with surface treatment: • base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board; • top coat DENASIL RAL 8016, resp. DENASIL RAL 7035, area density (130 – 300) g/m^2 (in wet state), applied on obverse side of board and on edges of board;

FINISH PROFIL	relief surface, with surface treatment: • base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board; • top coat DENASIL RAL 8016, resp. DENASIL RAL 7035, area density (130 – 300) g/m^2 (in wet state), applied on obverse side of board and on edges of board;
LASUR	smooth surface, with surface treatment: • base coat DENASIL Z, area density (120 – 140) g/m^2 (in wet state), applied on seamy side of board; • varnish DENAPOL NCS 2030-B90G, area density (140 – 200) g/m^2 (in wet state), applied on obverse side of board and on edges of board;
LASIN	smooth grinded surface, with surface treatment: • base coat DENASIL Z, area density (140 – 200) g/m^2 (in wet state), applied on seamy side of board; • varnish DENAPOL NCS 2030-B90G, area density (140 – 200) g/m^2 (in wet state), applied on obverse side of board and on edges of board;
DOLOMIT	smooth surface, with surface treatment: surface treatment on obverse side of board: • base coat DELTAKRYL Z2, area density (75 – 100) g/m^2 (in wet state); • coat DELTAKRYL Z2, area density (300 – 350) g/m^2 (in wet state); • marble brash SAXOGRAN, area density (3000 – 3500) g/m^2 (in wet state); • varnish AK, area density (200 – 230) g/m^2 (in wet state); surface treatment on seamy side of board: • varnish AK/C, area density (60 – 90) g/m^2 (in wet state).

Selection of representative specimens for tests in compliance with EN 13823 was carried out as follows:

- in order to determine the coat with the worst values of heat of combustion PCS, tests in compliance with EN ISO 1716 of individual coats (test reports 172/2006 – 176/2006, [4] – [8], issued by PTEÚ MV SR, Slovak Republic, on 12. 12. 2006) were carried out. The coat DOLOMIT was determined as the representative coat with the largest value of heat of combustion on the basis of test results;
- selection of board thickness was carried out on the basis of test results of boards 8 mm thick without surface treatment (test report 12198 – 1/3, [1], issued by CSI, a.s., Czech Republic, on 16. 07. 2004) and 40 mm (test report 06012017, [2], issued by IBS GmbH, on 17. 07. 2006). Test results of 8 mm thick boards were the worst, but 10 mm thick boards were used as representative because CTD CETRIS with surface treatment are produced with thickness min. 10 mm.

Values of total heat of combustion of CTD CETRIS with coats according to table No. 3 are calculated in compliance with EN ISO 1716 and are stated in following table (the worst parameters of individual layers were used for calculations):

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS Plus / Profil plus	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	CTD Cetris	8,0	10,8	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,434**	
CETRIS Finish / Finish profil	Denasil RAL 8016	0,100	0,1250	1250	16,740	2,093
	Denasil Z	0, 0534	0,0695	1300	13,597	0,945
	CTD Cetris	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,595**	

CETRIS Finish / Finish profil	Denasil Ral 7035	0,100	0,1250	1250	16,253	2,032
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	CTD Cetris	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,590**	
CETRIS Lasur / Lasin	Denapol NCS 2030-B90G	0,0419	0,0440	1050	28,413	1,250
	CTD Cetris	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,467**	
CETRIS Dolomit	Dolomit	2,5	3,275	-	1,631	5,342
	CTD Cetris	40,0	54,0	1350	2,290	123,660
	TOTAL				**2,252**	

Note: In term of reaction to fire classification, the layers Denasil Z, Denasil RAL 8016, Denasil RAL 7035, Denapol NCS 2030-B90G are taken as external non-substantial components of non-homogenous product (classification criterion in MJ/m2), CTD CETRIS and surface treatment Dolomit are taken as substantial components of non-homogenous product (classification criterion in MJ/kg).

On the basis of above mentioned facts and test results, the tests in compliance with EN 13823 were carried out with following representative specimens:

- cement-bonded particleboards CETRIS, 10 mm thick with surface treatment DOLOMIT, fixed to timber loadbearing construction, without cavity (mineral wool used), gaps in joints sealed by mastic DEXAFLAMM-R (test report FIRES-RF-017-07-AUNS, [9], issued by FIRES, s.r.o., on 09. 03. 2006);
- cement-bonded particleboards CETRIS, 10 mm thick with surface treatment DOLOMIT, fixed to timber loadbearing construction, with cavity (no mineral wool used), gaps in joints sealed by mastic DEXAFLAMM-R (test report FIRES-RF-018-07-AUNS, [10], issued by FIRES, s.r.o., on 09. 03. 2006);
- cement-bonded particleboards CETRIS, 10 mm thick 10 mm with surface treatment DOLOMIT, fixed to timber loadbearing construction, with cavity (no mineral wool used), gaps in joints not sealed by mastic (test report FIRES-RF-019-07-AUNS, [11], issued by FIRES, s. r. o., on 09. 03. 2006).

Testing phase No. 2

Sponsor asked for classification of product: **Cement-bonded acoustic particleboard CETRIS® AKUSTIC**. Composition of the product and way of end use is stated in clause 2.2.2 of this document, apart from surface treatment DOLOMIT NEW, which is not used in case of boards CETRIS® AKUSTIC.

In order to state reaction to fire class on the basis of results of tests in compliance with EN ISO 1716 and EN 13823 it was necessary to select representative specimens, which would cover construction of suspended ceiling according to 2.2.2 and following combinations of products with cement-bonded particleboards:

1) without surface treatment;
2) with surface treatment according to able No. 4;
3) without cavity;
4) with cavity;
5) timber loadbearing construction;
6) steel loadbearing construction;
7) gaps in joints not sealed by mastic;
8) gaps in joints sealed by mastic.

Detailed information about surface treatment is stated in following table:

Table No. 4

BASIC	smooth surface, without surface treatment;
PROFIL	relief surface, without surface treatment;
PLUS	smooth surface, with surface treatment: • base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board;
PROFIL PLUS	relief surface, with surface treatment: • base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board;
FINISH	smooth surface, with surface treatment: • base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board; • top coat DENASIL RAL 8016, resp. DENASIL RAL 7035, area density (130 – 300) g/m^2 (in wet state), applied on obverse side of board and on edges of board;
FINISH PROFIL	relief surface, with surface treatment: • base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board; • top coat DENASIL RAL 8016, resp. DENASIL RAL 7035, area density (130 – 300) g/m^2 (in wet state), applied on obverse side of board and on edges of board;
LASUR	smooth surface, with surface treatment: • base coat DENASIL Z, area density (120 – 140) g/m^2 (in wet state), aplikovaný na rubovej strane dosky; • varnish DENAPOL NCS 2030-B90G, area density (140 – 200) g/m^2 (in wet state), applied on obverse side of board and on edges of board;
LASIN	smooth grinded surface, with surface treatment: • base coat DENASIL Z, area density (140 – 200) g/m^2 (in wet state), aplikovaný na rubovej strane dosky; • varnish DENAPOL NCS 2030-B90G, area density (140 – 200) g/m^2 (in wet state), applied on obverse side of board and on edges of board;

Selection of representative specimens for tests in compliance with EN 13823 was carried out as follows:

- in order to determine the coat with the worst values of heat of combustion PCS, tests in compliance with EN ISO 1716 of individual coats (test reports 172/2006 – 176/2006, [4] – [8], issued by PTEÚ MV SR, Slovak Republic, on 12. 12. 2006) were carried out. The coat DOLOMIT was determined as the representative coat with the largest value of heat of combustion on the basis of test results;
- selection of board thickness was carried out on the basis of test results of boards 8 mm thick without surface treatment (test report 12198 – 1/3, [1], issued by CSI, a.s., Czech Republic, on 16. 07. 2004) and 40 mm (test report 06012017, [2], issued by IBS GmbH, on 17. 07. 2006). Test results of 8 mm thick boards were the worst, but 10 mm thick boards were used as representative because CTD CETRIS with surface treatment are produced with thickness min. 10 mm.

Values of total heat of combustion of cement-bonded acoustic particleboard CETRIS® AKUSTIC with coats according to table No. 4 (apart from coat DOLOMIT/DOLOMIT NEW which is not used in case of boards CETRIS® AKUSTIC) are calculated in compliance with EN ISO 1716 and are stated in following table (the worst parameters of individual layers were used for calculations):

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS® Plus / Profil plus	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	CTD Cetris®	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,434**	
CETRIS® Finish / Finish profil	Denasil RAL 8016	0,100	0,1250	1250	16,740	2,093
	Denasil Z	0, 0534	0,0695	1300	13,597	0,945
	CTD Cetris®	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,595**	
CETRIS® Finish / Finish profil	Denasil Ral 7035	0,100	0,1250	1250	16,253	2,032
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	CTD Cetris®	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,590**	
CETRIS® Lasur / Lasin	Denapol NCS 2030-B90G	0,0419	0,0440	1050	28,413	1,250
	CTD Cetris®	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,467**	

Note: In term of reaction to fire classification, the layers Denasil Z, Denasil RAL 8016, Denasil RAL 7035, Denapol NCS 2030-B90G are taken as external non-substantial components of non-homogenous product (classification criterion in MJ/m^2), cement-bonded acoustic particleboards CETRIS® AKUSTIC are taken as substantial components of non-homogenous product (classification criterion in MJ/kg).

On the basis of above mentioned facts and test results, the tests in compliance with EN 13823 were carried out with following representative specimens:

- cement-bonded acoustic particleboard CETRIS® AKUSTIC, 8 mm thick, with openings with diameter 12 mm evenly distributed on the whole surface in distance 32 mm, with surface treatment FINISH, gaps in joints of boards were not sealed by mastic,
  Surface treatment - smooth surface:
  - base coat DENASIL Z, area density (140 – 160) g/m^2 (in wet state), applied on obverse/seamy side of board and on edges of board;
  - top coat DENASIL RAL 8017, area density (130 – 300) g/m^2 (in wet state), applied on obverse side of board and on edges of board;
- used mineral wool ORSIK (manufacturer: Saint Gobain Orsil, s.r.o., Czech Republic) placed behind boards CERTIS, 40 mm thick, bulk density 22 kg.m^{-3};
- supporting construction made of steel galvanized profiles (60 x 27 x 06) mm, spacing of screws 300 mm, mineral wool ORSIK was placed between beams.

Testing phase No. 3

Sponsor asked for change of individual components of coat **DOLOMIT** in following composition:

- base coat DELTAKRYL Z2, area density (75 – 100) g/m^2 (in wet state);
- coat DELTAKRYL Z2, area density (300 – 350) g/m^2 (in wet state);
- marble brash SAXOGRAN, area density (3000 – 3500) g/m^2 (in wet state);
- varnish AK, area density (200 – 230) g/m^2 (in wet state);
- surface treatment on seamy side of board, varnish AK/C, area density (60 – 90) g/m^2 (in wet state)

for coat **DOLOMIT NEW** in following composition:

- coat Waterstop, water resistant coat for surface treatment of seamy side, area density 0,100 kg/m^2;
- epoxide plaster EPOXY-β-2, water resistant glue used as base for marble brash on obverse side, area density 0,200 kg/m^2;
- marble brash, area density 2,5 – 3 kg/m^2, grain 3 mm thick.

In order to change components of surface treatment DOLOMIT it was necessary to carry out test of heat of combustion in compliance with EN ISO 1716 of particular components and to calculate the total heat of combustion of product with surface treatment DOLOMIT so that it was possible to find out the influence of surface treatment on total heat of combustion of the product.

Calculated values with initial (previous) surface treatment:

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS® Dolomit	Dolomit	2,5	3,275	-	1,631	5,342
	CTD CETRIS®	40,0	54,0	1350	2,290	123,660
	TOTAL				**2,252**	

Calculated values with the new surface treatment:

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS® DOLOMIT NEW	CTD CETRIS® Basic	40	54	1350	1,744	94,176
	Coat Waterstop	-	0,100	-	16,891	1,6891
	Epoxide plaster EPOXY-ß-2	-	0,200	-	14,755	2,951
	Marble brash	-	2 - 3	-	-0,129	-0,3225
	TOTAL				**1,734**	

Final value of heat of combustion of new components was lower as values of initial (previous) surface treatment. Therefore, on the basis of the test results, it was possible to classify the product with new surface treatment to the same classification class as product with initial (previous) surface treatment DOLOMIT if the same field of application and way of end use is maintained.

Testing phase No. 4

Sponsor asked for change of coat DENASIL Z, top coat DENASIL RAL 8016, DENASIL RAL 7035 and varnish DENAPOL NCS 2030-B90G (manufacturer DENAS COLOR a.s., Bílovec, Czech Republic) for coats BTAitop 1000A/CRT, BTAitop 1000A/CTS and varnish BTAitop 1000A/CTS-lazura, which are used as surface treatments according to clause 2.2.2.

In order to change the coats and varnish it was necessary to carry out tests of heat of combustion in compliance with EN ISO 1716 of the new components and to calculate the total heat of combustion of product with surface treatment so that it was possible to find out the influence of new coats and varnish on total heat of combustion of the product.

Calculated values of total heat of combustion with initial (previous) coats:

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS Plus / Profil plus	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	CTD Cetris	8,0	10,8	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,434**	

CETRIS Finish / Finish profil	Denasil RAL 8016	0,100	0,1250	1250	16,740	2,093
	Denasil Z	0, 0534	0,0695	1300	13,597	0,945
	CTD Cetris	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,595**	
CETRIS Finish / Finish profil	Denasil Ral 7035	0,100	0,1250	1250	16,253	2,032
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	CTD Cetris	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,590**	
CETRIS Lasur / Lasin	Denapol NCS 2030-B90G	0,0419	0,0440	1050	28,413	1,250
	CTD Cetris	8,0	10,80	1350	2,290	24,732
	Denasil Z	0,0534	0,0695	1300	13,597	0,945
	TOTAL				**2,467**	
CETRIS Dolomit	Dolomit	2,5	3,275	-	1,631	5,342
	CTD Cetris	40,0	54,0	1350	2,290	123,660
	TOTAL				**2,252**	

Calculated values of total heat of combustion of surface treatment according to clause 2.2.2 with new coats:

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS® PLUS / PROFIL PLUS	BTAitop 1000A/CRT	-	0,07	-	14,051	0,984
	CTD CETRIS®	8,0000	10,8000	1350	2,290	24,732
	BTAitop 1000A/CRT	-	0,07	-	14,051	0,984
	TOTAL				**2,440**	
CETRIS® FINISH / PROFIL FINISH / AKUSTIC FINISH	BTAitop 1000A/CTS	-	0,12	-	14,331	1,720
	BTAitop 1000A/CRT	-	0,0875	-	14,051	1,229
	CTD CETRIS®	8,0000	10,8000	1350	2,290	24,732
	BTAitop 1000A/CTS	-	0,0875	-	14,051	1,229
	TOTAL				**2,606**	
LASUR / AKUSTIC LASUR / LASIN / AKUSTIC LASIN	BTAitop 1000A/CTS-lazura	-	0,045	-	15,871	0,714
	BTAitop 1000A/CRT	-	0,07	-	14,051	0,984
	CTD CETRIS®	8,0000	10,8000	1350	2,290	24,732
	BTAitop 1000A/CTS	-	0,07	-	14,051	0,984
	TOTAL				**2,450**	

Measured values of heat of combustion of the new coats and calculated total values of heat of combustion of boards CETRIS® and CETRIS® AKUSTIC with new coats proved that stated values are lower than values of heat of combustion in case of previously determined representative coat DOLOMIT, of which the heat of combustion value was 5,342 MJ/m^2. Because of above stated fact, the initial class of reaction to fire is not changed when using of the new types of coats.

Testing phase No. 5

Sponsor asked for change in composition of coatings for surface treatments type FINISH (top coating - top covering coating) and type LASUR (top coat – top glazing varnish). In new coating composition of surface treatment FINISH and LASUR is used also two-component primer coating BTAi EP 3000 AB.

In order to change in composition of coatings for surface treatments was necessary to carry out tests of heat of combustion in compliance with EN ISO 1716 of new base coating BTAi EP 3000 AB and from results of all components of surface treatments calculate total heat of combustion of product with surface treatment type FINISH, FINISH PROFIL, AKUSTIC FINISH, PROFIL FINISH, LASUR, PROFIL LASUR, LASIN and AKUSTIC LASIN so that it was possible to find out the influence of new coatings and varnish on total heat of combustion of the product.

Calculated values of total heat of combustion with initial surface treatments type FINISH, FINISH PROFIL, AKUSTIC FINISH, PROFIL FINISH, LASUR, PROFIL LASUR, LASIN a AKUSTIC LASIN:

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS® FINISH / FINISH PROFIL / AKUSTIC FINISH	BTAitop 1000A/CTS	-	0,104	-	14,331	1,490
	BTAitop 1000A/CRT	-	0,130	-	14,051	1,827
	CTD CETRIS®	8,0000	10,8000	1350	2,290	24,732
	BTAitop 1000A/CTS	-	0,130	-	14,051	1,827
	TOTAL				**2,729**	
LASUR / LASIN/ PROFIL LASUR / AKUSTIC LASIN	BTAitop 1000A/CTS-lazura	-	0,076	-	15,871	1,206
	BTAitop 1000A/CRT	-	0,130	-	14,051	1,827
	CTD CETRIS®	8,0000	10,8000	1350	2,290	24,732
	BTAitop 1000A/CTS	-	0,130	-	14,051	1,827
	TOTAL				**2,710**	

Calculated values of total heat of combustion of reference surface treatment Dolomit

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS® Dolomit	Dolomit	2,5	3,275	-	1,631	**5,342**
	CTD CETRIS®	40,0	54,0	1350	2,290	123,660
	TOTAL				**2,252**	

Calculated values of total heat of combustion with new surface treatments type FINISH, FINISH PROFIL, AKUSTIC FINISH, PROFIL FINISH, LASUR, PROFIL LASUR, LASIN and AKUSTIC LASIN:

Product	Layer	Thickness	Area density	Bulk density	Heat of combustion	
		[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CETRIS® FINISH / FINISH PROFIL / AKUSTIC FINISH	BTAitop 1000A/CTS	-	0,104	-	14,331	1,490
	BTAi EP 3000 AB	-	0,073	-	17,951	1,307
	BTAitop 1000A/CRT	-	0,130	-	14,051	1,827
	CTD CETRIS®	8,0000	10,8000	1350	2,290	24,732
	BTAitop 1000A/CTS	-	0,130	-	14,051	1,827
	TOTAL				**2,775**	
LASUR / LASIN/ PROFIL LASUR / AKUSTIC LASIN	BTAitop 1000A/CTS-lazura	-	0,076	-	15,871	1,206
	BTAi EP 3000 AB	-	0,073	-	17,951	1,307
	BTAitop 1000A/CRT	-	0,130	-	14,051	1,827
	CTD CETRIS®	8,0000	10,8000	1350	2,290	24,732
	BTAitop 1000A/CTS	-	0,130	-	14,051	1,827
	TOTAL				**2,757**	

Measured values of heat of combustion of the new coating and calculated total values of heat of combustion of boards CETRIS® and CETRIS® AKUSTIC with new composition of surface treatments proved that stated values are lower than values of heat of combustion in case of previously determined representative surface treatment DOLOMIT, of which the heat of combustion value was 5,342 MJ/m^2. Because of above stated fact, the initial class of reaction to fire is not changed when using of the new compositions of surface treatments FINISH, FINISH PROFIL, AKUSTIC FINISH, PROFIL FINISH, LASUR, PROFIL LASUR, LASIN a AKUSTIC LASIN.

Testing phase No. 6

Sponsor asked to add a new cement-bonded particle board CETRIS® INCOL as an alternative to cement-bonded particleboard CETRIS®.

Product	Thickness	Area density	Bulk density	Heat of combustion	
	[mm]	[kg/m^2]	[kg/m^3]	MJ/kg	MJ/m^2
CTD CETRIS® without surface treatment	40,0	54,0	1350	2,290	123,660
CTD CETRIS® INCOL without surface treatment	12,0	16,8	1400	2,244	37,699

Measured value of heat of combustion alternative of board CETRIS® INCOL is lower than value of heat of combustion of the previously chosen representative panel CTD CETRIS®, therefore, the reaction to fire class does not change when using the alternative CETRIS® INCOL board.

5. EXTENDED APPLICATION RESULTS

5.1 APPLICATION RANGE – PRODUCT FAMILY

This extended application report is valid for product described in clause 2.1 and following end use:

i) in horizontal (excluding floorings) and vertical position;
ii) without surface treatment;
iii) with surface treatment according to clause 2.2.2 (all color shades);
iv) without cavity;
v) with cavity (apart from boards CETRIS® AKUSTIC);
vi) with timber supporting construction (apart from boards CETRIS® AKUSTIC);
vii) with steel supporting construction;
viii) gaps in joints of boards without mastic;
ix) gaps in joints of boards with mastic (apart from boards CETRIS® AKUSTIC).

This extended application report is valid for following product parameters:

Thickness	- thickness of cement-bonded particleboards CETRIS® and CETRIS® AKUSTIC may vary in range from 8 mm to 40 mm, board CETRIS® INCOL is produced only with thickness 12 mm - thickness of mineral wool be changed; - change in surface treatment thickness is allowed within the scope of manufacturing tolerances;
Bulk density [kg/m^3]	- change in the bulk density of cement-bonded particleboards CETRIS®, CETRIS® INCOL and CETRIS® AKUSTIC is allowed within the scope of manufacturing tolerances; - increase in the bulk density of mineral wool is allowed;
Area density [kg/m^2]	- change in the bulk density is allowed within the scope of manufacturing tolerances;

Product composition	- content of individual components CTD according to clause 2.2.2 shall not be changed; - only surface treatment according to clause 2.2.2 may be used for CTD; - only mineral wool with minimal reaction to fire class A2-s1, d0 is allowed to be used in construction of the product; - ceiling according to EN 13964 is produced with/without cavity above membrane, only mineral wool with reaction to fire class A1 may be used for insulation; - supporting construction may be made of timber (apart from boards CETRIS® AKUSTIC), timber-based materials (apart from boards CETRIS® AKUSTIC) and steel, or other materials with reaction to fire class A1.

5.2 REACTION TO FIRE PERFORMANCE PARAMETERS

The element, Cement-bonded particleboard CETRIS® /CETRIS® INCOL/ CETRIS® AKUSTIC, in relation to its reaction to fire behaviour is classified:

A2

The additional classification in relation to smoke production is:

s1

The additional classification in relation to flaming droplets / particles is:

d0

The format of the reaction to fire classification for construction products excluding floorings and linear pipe thermal insulation products is:

Fire behaviour		Smoke production			Flaming droplets	
A2	-	s	1	,	d	0

Reaction to fire classification: A2-s1, d0

6. LIMITATIONS

The extended application results relate to the behaviour of a product/product family under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product/product family in use.

This extended application report is valid unless test results are not in conflict with it.

This classification document does not represent type approval or certification of the product. Classification classes are stated in separate classification report based on this extended application report.

The resistance to fire extended application report is valid provided that the product, field of application, standards and regulations are not changed.

Approved:

Ing. Štefan Rástocký
leader of the testing laboratory

SKÚŠOBNÉ LABORATÓRIUM • PRÜFLABORATORIUM • TESTING LABORATORY
FIRES
The Experts on Fire Safety
-1-

Signed:

Ing. Samuel Skokan
technician of the testing laboratory