

Hygiene and health related properties of HeartFelt® Ceilings

1.0 Introduction

This document covers properties that are relevant to hygiene and health of HeartFelt® Ceilings. HeartFelt® Ceilings are a new and unique product in the construction business. Therefore we have composed this document to provide answers to possible questions raised concerning health and hygiene issues.

1.1 Application/ intended use

HeartFelt® Ceilings are designed as suspended ceilings for interior applications and can be used in exposure classes A and B according Table 8 of EN 13964:2014. Normal environmental influences are limited to slight variations in temperature and humidity as common in an interior climate. Pollution degree: low (offices, hospitals) to medium (restaurants).

2.0 Test program

An extensive range of tests was conducted to establish properties like propensity for dust adhesion, staining, clean ability, susceptibility to the action of micro-organisms and fungal growth. In addition we have tested on possible emissions to indoor air and applied for a number of certification schemes.

2.1 Dust adhesion, in-house comparative test

To appraise the adhesion of dust and to establish a comparison with the adhesion properties of a well-known product like metal ceilings a continuous pollution test was run for a period of 2 years in 3 different environments:

- Office environment
- Traffic environment (corridor)
- Production environment

The reference was a set of perforated linear panels (Luxalon® 30BD) with open joints that were installed in a sealed box, side-by-side with HeartFelt® panels . With a ventilator, room air was sucked through the joints between the sample panels (air direction: face to back).

The appraisal was a visual comparison of the Luxalon® panels with the HeartFelt® panels and after 2 year exposure there was no dust/ dirt adhesion visible on both products in any of the 3 environments.

2.2 Staining by chlorinated water (swimming pool water), ISO 105 E03:1994

The colourfastness for staining by chlorinated water was tested on a sample in the colour 7599 (anthracite). The material was exposed for 1 hour to a solution with 50mg of active chlorine per litre. The colourfastness was grade 5 on a numerical scale from 1-5 (where 1= bad and 5= good).

2.3 Propensity to fuzzing/ pilling, modified Martindale test ISO 12945-2:2000

Samples were exposed to rubbing in the Martindale test apparatus. The results after 125 turns were grade 3 (moderate fuzzing/ pilling) and after 7000 turns: grade 2-1 (distinct to dense fuzzing/ pilling) on a numerical scale of 5 (where 1= dense pilling and 5= no change).

2.4 Resistance to cold liquids/ clean ability, NEN EN 12720

A set of samples in 2 colours (7596 light grey and 7599 anthracite) was exposed to a range of standard pollution agents:

- Pollution 00501 standard carpet soil
- Pollution 00502 vacuum cleaner dust, sieved
- Pollution 00509-40 Leverkusen standard soil 40

After exposure all samples were cleaned with 3 agents:

- Rinse with lukewarm tap water
- Standard household cleaner: sprayed on, leave to soak for 60 seconds, cleaning and rinse with lukewarm tap water
- Solution of industrial cleaner (15ml dissolved in 1 litre lukewarm water), sprayed on, cleaning and rinse with lukewarm tap water

The appraisal is a colour comparison (grey scale) of the exposed and cleaned samples with a fresh sample (non-polluted and non-treated) and is a numerical rating from 1 (= strong change) to 5 (= no change).

Depending on sample colour, pollution type and cleaning agent, the results range from 3 (moderate change) to 5 (no change).

2.5 Bacterial growth, ISO 22193-07

Samples were exposed to 2 common and standardised bacterial strains with the following results:

- Staphylococcus aureus DSM 346/ATCC 6538P: log reduction > 1.67 (bacterial growth)
- Escherichia coli DSM 1576/ATCC 8739: log reduction > 4 (no bacterial growth)

Note: since the propensity for bacterial growth varies per bacteria strain it is recommended to discuss beforehand the strain(s) that is(are) relevant for the project and need to be subjected to testing.

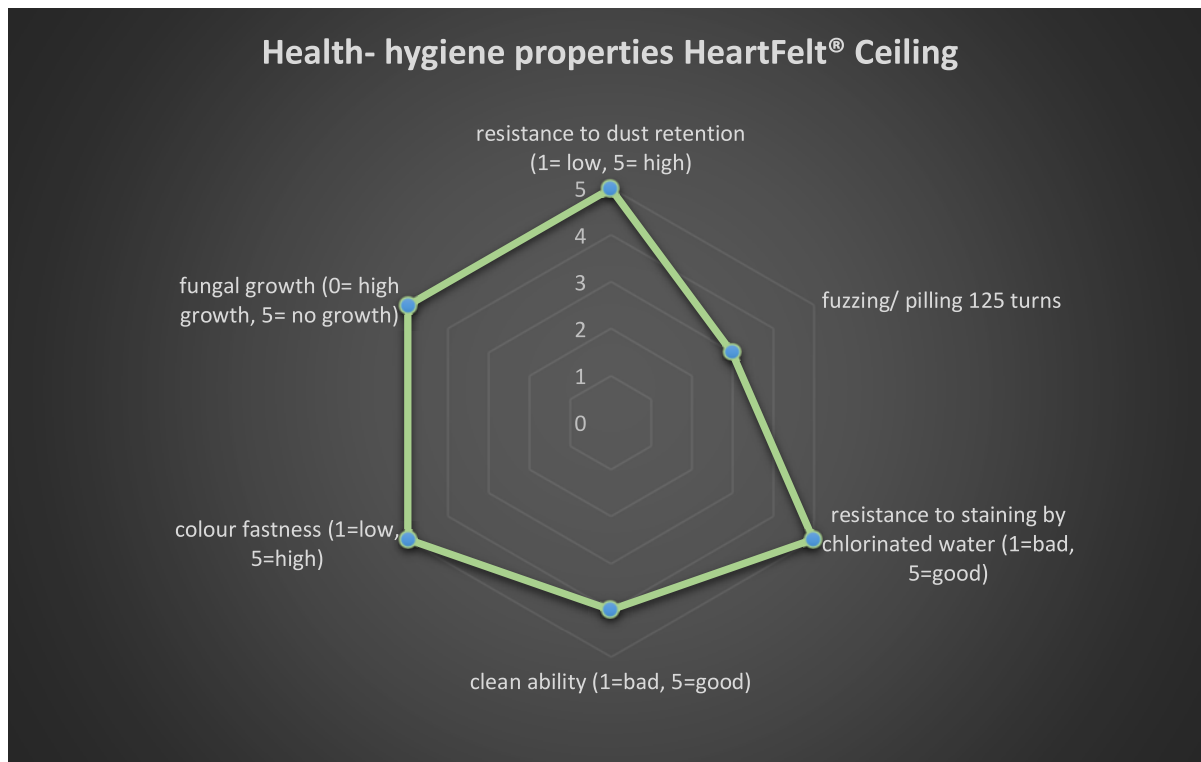
2.6 Fungal growth, ISO 846:1997

Samples were exposed to a mixed suspension of fungal spores and these could only use the test specimen as food (nutritive) source. The intensity of growth is appraised by visual inspection under a microscope and expressed in a numerical figure ranging from 0 (no growth apparent) to 5 (heavy growth, covering the whole sample surface).

The results for all samples were 0: no visual or microscopic fungal sporulation or growth observed.


2.7 Infographic

We have put all above results together in below infographic.



2.9 Emissions to indoor air, EN ISO 16000 series

HeartFelt® Ceilings are tested on (VOC) emissions to indoor air with the following declarations:

Regulation or protocol	Conclusion	Version of regulation or protocol
French VOC Regulation		Regulation of March and April 2011 (DEVL1101903D and DEVL1104875A)
French CMR components	Pass	Regulation of March and April 2011 (DEVL1101903D and DEVL1104875A)
AgBB	Pass	AgBB of February 2015, DIBt of October 2010
Belgian Regulation	Pass	Royal decree of May 2015 (C-2014/24239)
Indoor Air Comfort®	Pass	Indoor Air Comfort 5.3a of March 2015
Indoor Air Comfort GOLD®	Pass	Indoor Air Comfort GOLD 5.3a of March 2015
EN 717-1 [§]	E1	2004
BREEAM International	Compliant	GN22: BREEAM Recognised Schemes for VOC Emissions from Building Products
LEED v4 (outside U.S.)	Compliant	LEED v4 for Building Design and Construction (April, 2015)

Regulation or protocol	Conclusion	Version of regulation or protocol
M1	Pass	M1 Protocol of January 2015

3.0 Certification

We feel it is important to protect the environment and to make sure that the products we market are safe, sustainable and contribute to a circular economy. Therefore HeartFelt® is already certified for a number of schemes or certification has been applied for.

3.1 Cradle to Cradle™

HeartFelt® Linear Ceiling system is C2C certified level Bronze.

<http://www.c2ccertified.org/products/scorecard/ceiling-systems-hunter-douglas-europe-b.v>



3.2 Oeko-Tex® Standard 100

The STANDARD 100 by OEKO-TEX® is a worldwide consistent, independent testing and certification system for raw, semi-finished, and finished textile products at all processing levels, as well as accessory materials used.

HeartFelt® Ceilings is Oekotex Standard 100 Product Class IV (decorative material and furnishing) certified.



3.3 GreenGuard

The GREENGUARD Certification Program (formerly known as GREENGUARD Indoor Air Quality Certification) gives assurance that products designed for use in indoor spaces meet strict chemical emissions limits, which contribute to the creation of healthier interiors.

HeartFelt® Ceiling is GreenGuard Gold certified for offices and offices/schools.



3.4 BAMB (Buildings As Material Banks) and Material Passports

HeartFelt® ceilings is one of the products participating in the REM (Reversible Experience Modules) Exhibition. This travelling exhibition will take place starting 2018 and showcases new possibilities created for the build environment by combining material passports with reversible building design. The BAMB initiative is a cooperation of 16 partners from 8 European countries and is EU funded under the Horizon 2020 programme.

This document is also available as download from www.hunterdouglasarchitectural.eu.