Textiles & Flooring Institute GmbH

# TFI Report 441076-02

## acoustics

**Customer**

Tapibel NV
Industrielaan 4
B-3900 Overpelt
BELGIUM

**Product**

textile floor covering
Cobalt / Cobalt Lines

**Responsible at TFI**

Dr.-Ing. Alexander Siebel
Tel: +49 241 9679 170
a.siebel@tfi-online.de

This report includes 2 pages and 2 annex(es)

**Aachen, 01.10.2014**

**Dr. Jens-Christian Winkler**
**authorized manager**

The present document is provided with a qualified electronic signature and is valid without autograph signature.





Notified Body
No. 1658

Testing laboratory,
inspection and certification
body recognised by the DIBt
(Deutsches Institut für Bautechnik)

DAkkS
Deutsche
Akkreditierungsstelle
D-PL-17152-01-00

Accredited for the methods indicated
in the annex to the DAkkS certificate

Charlottenburger Allee 41
52068 Aachen · Germany
Tel: +49.241.9679 00
www.tfi-online.de

HRB 8157 Aachen
VAT No. DE209411312
Managing Director
Dr. Ernst Schröder

Textiles & Flooring Institute GmbH

## 1 Transaction

| | |
|---|---|
| Test order | Sound absorption according to EN ISO 354:2003, EN ISO 11654:1997<br>Impact sound insulation according to EN ISO 10140-3:2010, EN ISO 717-2:2006 |
| Order date | 15.07.2014 |
| Your reference | H. van |
| Product designation | Cobalt / Cobalt Lines |
| TFI sample number | 14-07-0135 |

## 2 Product Specification

| | |
|---|---|
| Type of manufacture | tufted |
| Type of surface | loop pile |
| Backing | heavy backing |
| Pattern | plain, patterned |
| Colour | grey, light grey |
| Use surface | -- |
| Total thickness [mm] | 6,5 |
| Total mass per unit area [g/m²] | 4590 |
| Type of delivery | tiles |
| | *customer information |

## 3 Results

| | |
|---|---|
| Sound absorption [$\alpha_W$] | 0,15 (H) |
| Impact sound insulation [$\Delta L_w$] | 23 dB |

## 4 Annexes

| | |
|---|---|
| Sound Absorption | SA 441076-02 |
| Impact sound Insulation | TS 441076-02 |

The annexes marked [a] are based on tests accredited in accordance with EN ISO/IEC 17025.





Charlottenburger Allee 41
52068 Aachen · Germany
Tel: +49.241.9679 00
www.tfi-online.de

HRB 8157 Aachen
VAT No. DE209411312
Managing Director
Dr. Ernst Schröder

Textiles & Flooring Institute GmbH

# **Annex SA** - Sound absorption

## 1 Transaction

| | |
|---|---|
| Product designation | Cobalt / Cobalt Lines |
| TFI sample number | 14-07-0135 |
| Testing period | 23.07.2014 |

## 2 Test Method / Requirements

| | |
|---|---|
| EN ISO 354:2003 | Measurement of sound absorption in a reverberation room |
| EN ISO 11654:1997 | Sound absorbers for use in buildings – Rating of sound absorption |
| Deviation from the standard | None |

The test was performed by an authorized subcontractor.

## 3 Results

cf. p. 2-3





Charlottenburger Allee 41
52068 Aachen · Deutschland
Tel: +49.241.9679 00
www.tfi-online.de

HRB 8157 Aachen
Ust-IdNr. DE209411312
Geschäftsführer
Dr. Ernst Schröder

# Sound absorption according EN ISO 354

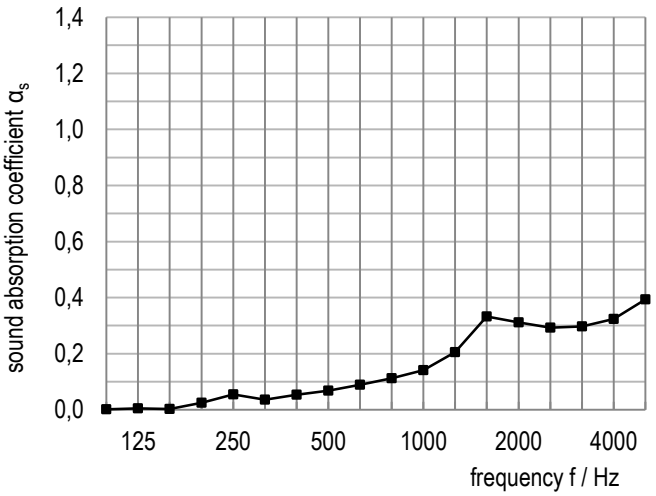
Measurement of sound absorption in a reverberation room

| | |
|---|---|
| **Product name** | **Cobalt / Cobalt Lines** |
| **TFI sample number** | **14-07-0135** |
| Construction (from top to bottom) | Cobalt / Cobalt Lines |
| Installation term | TYP A |
| Test area | 11.76 m² / 4.00 m x 2.94 m |
| Installation | loose laid on the floor of the reverberation room |
| Testing period | 23.07.2014 |
| Room | Reverberation room |
| Volume | 211 m³ |

| | ϴ [°C] | r. h. [%] | B [kPa] |
|---|---|---|---|
| without sample | 19,4 | 54 | 99.7 |
| with sample | 19,4 | 54 | 99.7 |

Note ---

| Frequency [Hz] | T1 [s] | T2 [s] | $\alpha_s$ [-] |
|---|---|---|---|
| 100 | 4,93 | 4,92 | **0,00** |
| 125 | 7,64 | 7,55 | **0,00** |
| 160 | 7,31 | 7,26 | **0,00** |
| 200 | 8,45 | 7,89 | **0,02** |
| 250 | 7,48 | 6,55 | **0,06** |
| 315 | 6,76 | 6,23 | **0,04** |
| 400 | 6,71 | 5,98 | **0,05** |
| 500 | 7,05 | 6,05 | **0,07** |
| 630 | 6,97 | 5,74 | **0,09** |
| 800 | 6,63 | 5,27 | **0,11** |
| 1000 | 6,33 | 4,84 | **0,14** |
| 1250 | 6,02 | 4,22 | **0,20** |
| 1600 | 5,82 | 3,49 | **0,33** |
| 2000 | 5,47 | 3,44 | **0,31** |
| 2500 | 4,74 | 3,20 | **0,29** |
| 3150 | 4,04 | 2,86 | **0,30** |
| 4000 | 3,41 | 2,47 | **0,32** |
| 5000 | 2,74 | 2,00 | **0,39** |




T1 reverberation time (average) / without sample

T2 reverberation time (average) / with sample

$\alpha_s$ sound absorption according EN ISO 354

# Sound absorption for the application in buildings according EN ISO 11654

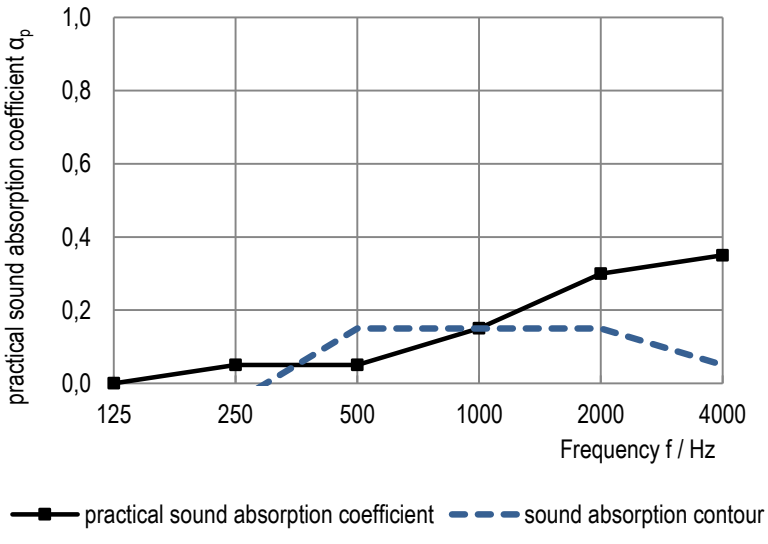
Valuation of sound absorption

| | |
|---|---|
| **Product name** | **Cobalt / Cobalt Lines** |
| **TFI sample number** | **14-07-0135** |
| Construction (from top to bottom) | Cobalt / Cobalt Lines |
| Installation term | TYP A |
| Test area | 11.76 m² / 4.00 m x 2.94 m |
| Installation | loose laid on the floor of the reverberation room |
| Testing period | 23.07.2014 |
| Room | Reverberation room |
| Volume | 211 m³ |

| | ϴ [°C] | r. h. [%] | B [kPa] |
|---|---|---|---|
| without sample | 19,4 | 54 | 99.7 |
| with sample | 19,4 | 54 | 99.7 |

Note ---

| Frequency [Hz] | $\alpha_s$ [-] | $\alpha_p$ [-] |
|---|---|---|
| 100 | 0,00 | |
| 125 | 0,00 | **0,00** |
| 160 | 0,00 | |
| 200 | 0,02 | |
| 250 | 0,06 | **0,05** |
| 315 | 0,04 | |
| 400 | 0,05 | |
| 500 | 0,07 | **0,05** |
| 630 | 0,09 | |
| 800 | 0,11 | |
| 1000 | 0,14 | **0,15** |
| 1250 | 0,20 | |
| 1600 | 0,33 | |
| 2000 | 0,31 | **0,30** |
| 2500 | 0,29 | |
| 3150 | 0,30 | |
| 4000 | 0,32 | **0,35** |
| 5000 | 0,39 | |




$\alpha_s$ sound absorption according EN ISO 354

$\alpha_p$ practical sound absorption coefficient according EN ISO 11654

**Evaluation according EN ISO 11654:**

**Evaluated sound absorption grade $\alpha_w$ = 0,15 ( H )**

**Sound absorption class: E**

Textiles & Flooring Institute GmbH

# **Annex TS** - Impact sound reduction

## 1 Transaction

| | |
|---|---|
| Product designation | Cobalt / Cobalt Lines |
| TFI sample number | 14-07-0135 |
| Testing period | 23.07.2014 |

## 2 Test Method / Requirements

| | |
|---|---|
| EN ISO 10140-3:2010 | Laboratory measurement of sound insulation of building elements – Part 3: Measurement of impact sound insulation |
| Deviations | None |
| EN ISO 717-2:2013 | Rating of sound insulation in buildings and of building elements – Part 2: Impact sound insulation |
| Deviations | None |

The test was performed by an authorized subcontractor.

## 3 Results

cf. p. 2





Charlottenburger Allee 41
52068 Aachen · Deutschland
Tel: +49.241.9679 00
www.tfi-online.de

HRB 8157 Aachen
Ust-IdNr. DE209411312
Geschäftsführer
Dr. Ernst Schröder

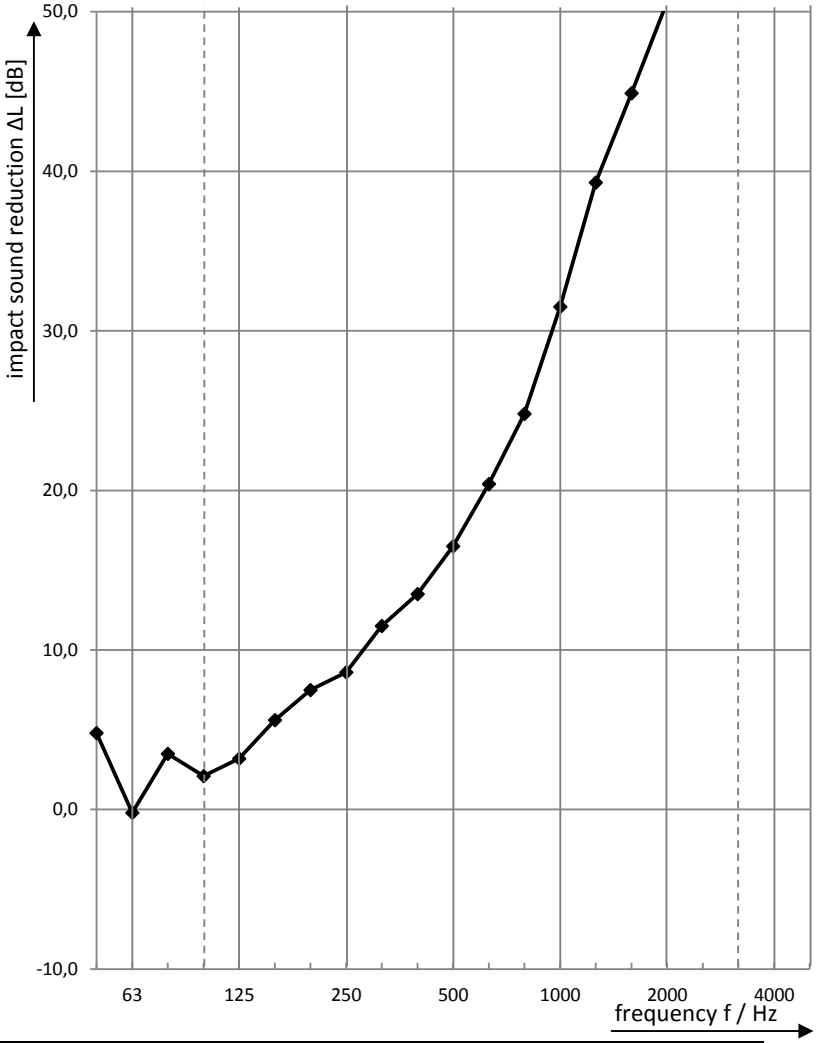
# Impact sound insulation according ISO 10140-1

Measurment of impact sound insulation by a floor covering on a solid concrete floor

| | |
|---|---|
| **Product name** | **Cobalt / Cobalt Lines** |
| **TFI sample number** | 14-07-0135 |
| Construction (from top to bottom) | Cobalt / Cobalt Lines |
| Category | I according to ISO 10140 |
| Installation | loose laid |
| Setting time | - |
| Installed by | laboratory |
| Reference floor | solid concrete floor |
| Note | - |
| Testing period | 23.07.2014 |

| | ϴ [°C] | r.h. [%] |
|---|---|---|
| in the source room | 19,5 | 55 |
| in the receiving room | 19,4 | 56 |

| **Frequency** f **[Hz]** | $L_{n,0}$ third-octave **[dB]** | **ΔL** third-octave **[dB]** |
|---|---|---|
| 50 | 56,5 | 4,8 |
| 63 | 62,7 | -0,2 |
| 80 | 57,4 | 3,5 |
| 100 | 57,2 | 2,1 |
| 125 | 67,5 | 3,2 |
| 160 | 62,6 | 5,6 |
| 200 | 64,1 | 7,5 |
| 250 | 67,1 | 8,6 |
| 315 | 65,3 | 11,5 |
| 400 | 64,7 | 13,5 |
| 500 | 65 | 16,5 |
| 630 | 65,3 | 20,4 |
| 800 | 66,4 | 24,8 |
| 1000 | 67,8 | 31,5 |
| 1250 | 67,7 | 39,3 |
| 1600 | 68,2 | 44,9 |
| 2000 | 68,8 | 50,6 |
| 2500 | 68,6 | 56,4 |
| 3150 | 67,9 | 57,2 |
| 4000 | 66,9 | |
| 5000 | 64,4 | |




*Airborne noise correction for the measured value

**Evaluation according to ISO 717-2**

| | | | | | |
|---|---|---|---|---|---|
| **$\Delta L_w$ =** | **23 dB** | **$\Delta L_{lin}$ =** | **11 dB** | | |
| $C_{l,\Delta}$ = | -12 dB | $C_{l,r}$ = | 1 dB | $C_{l,r,50\text{-}2500}$ = | 3 dB |

The results are based on measurements, which were performed under laboratory conditions with artificial excitation (standard procedure).