BUILDING COMMON GROUND MAX FRANK

Test report

MAX FRANK impact sound products

Egcoscal / Egcostep®/ Egcosono / Egcopal

Acoustic testing of staircase and landing bearings according to DIN 7396 in the test bench

5214021956 | 10/11/2021

tested by: Empa, Swiss Federal Laboratories for Material Science and Technology
Acoustics/Noise Reduction Division, CH – Dübendorf

(Translation of the original German text by MAX FRANK, not checked by the author!)

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Table of contents

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Germany

Test report no. 5214021956

Test assignment:	**Acoustic testing of staircase and landing bearings according to DIN 7396 in the test bench**
Client:	**Max Frank GmbH & Co. KG, DE-94339 Leibfling**
Test object:	**Various stair and landing bearings**
Your order of:	09/05/2019
Performance of the test:	03/02/2020 – 22/03/2021
Number of pages:	234

Swiss Federal Laboratories for Material Science and Technology, Acoustics/Noise Reduction Division
Dübendorf, 10 November 2021

Test manager:	Test site manager:
L. Moy	S. Schoenwald

Contents

1 Order

On 09/05/2019, Max Frank GmbH & Co. KG placed an order with Empa to test various staircases and landing bearings for solid stairs and landings in Empa's laboratories. The project manager and contact person from Max Frank GmbH & Co. KG for this project was Mr Uygun.

2 Test setup

The test setup and the test procedure for determining the acoustic properties of the staircase and landing bearings complied with the requirements of standard DIN 7396 [1] "Tests in building acoustics – Test methods for the acoustical characterization of isolating elements for heavy stairs."

As required by DIN 7396, the measurements were carried out according to the series of standards EN ISO 10140 ([2]-[8]). The single figure data were determined according to the series of standards EN ISO 717 ([9], [10]).

Empa's internal documentation SOP-4 (No. 1668), which is subject to quality assurance, records the details of the measurement procedure as well as the characteristics of the test facilitys, measuring equipment used and calibration data.

2.1 Test objects

The standard impact sound pressure level L_n, the impact sound pressure level difference ΔL^* and the impact sound pressure level reduction ΔL were determined for the following test objects:

Staircase bearings:

- Egcoscal SP in S-shape and F-shape for load level 43 kN (Figure 1)
  Staircase bearing Egcoscal SP in S-shape consists in the horizontal plane of a 15 mm thick foam plate in which a 15 mm thick elastomer bearing with the dimensions 26 x 900 mm is integrated in the centre. To ensure that the S-shaped staircase bearing can be inserted into the staircase bracket in a completely acoustically decoupled manner, it also has two vertical foam plates, each 10 mm thick (see drawing page 224). At the base, the stair flight was supported on Egcoscal SP in an F-shape. This staircase bearing also consists of a 15 mm thick foam plate in which a 15 mm thick elastomer bearing with the dimensions 26 x 900 mm is integrated in the centre.
  During testing of Egcoscal SP in S-shape (LS 43 kN), the z = 1.5 cm thick distance plate FDPL type 15420 (Figure 2) was used between the wall and the stair flight.
- Egcoscal SP in S-shape and F-shape for load level 61 kN
  Staircase bearing Egcoscal SP in S-shape consists in the horizontal plane of a 15mm thick foam plate in which a 15 mm thick elastomer bearing with the dimensions 31 x 900 mm is integrated in the centre.

To ensure that the S-shaped staircase bearing can be inserted into the staircase bracket in a completely acoustically decoupled manner, it also has two vertical foam plates, each 10 mm thick (see drawing page 225). At the base, the stair flight was supported on Egcoscal SP in an F-shape. This staircase bearing also consists of a 15mm thick foam plate in which a 15 mm thick elastomer bearing with the dimensions 31 x 900 mm is integrated in the centre. The bearing is the same as in Figure 1, but the elastomer bearing is 31 mm wider than Egcoscal SP in S-shape and F-shape for the lower load level of 43 kN.

During testing of Egcoscal SP in S-shape (LS 61 kN), the z = 1.5 cm thick distance plate FDPL type 15420 (Figure 2) was used between the wall and the stair flight.

- Egcostep SP with 15mm elastomer bearing, version type S6 (Figure 3 to Figure 5). The staircase bearing consists of a 13 mm thick sandwich element with the dimensions 1000 x 180 mm. The side of the sandwich element with reinforcement elements was already attached and concreted in along the side of the stair landing in advance. On the side that later faces the decoupled stair flight, the sandwich element has 6 support points arranged at a centre distance of 150 mm along the sandwich element. The stair flight to be decoupled in terms of impact sound is mounted on these support points fitted with elastomer bearings. The dimensions of the individual support points are 53 x 75 mm each (overhang x width). 6 elastomer pads with 53 x 75 mm and 15 mm thick were used in the design variant type S6.

  The z = 1.5 cm thick distance plate FDPL type 15420 (Figure 2) was used between the wall and the stair flight during testing of Egcostep SP Type S6.

- Egcostep SP with 15mm elastomer bearing, version type S4 (Figure 6)
  The staircase bearing consists of a 13 mm thick sandwich element with the dimensions 1000 x 180 mm. The side of the sandwich element with reinforcement elements was already attached and concreted in along the side of the stair landing in advance. On the side that later faces the decoupled stair flight, the sandwich element has 6 support points arranged at a centre distance of 150mm mm along the sandwich element. The stair flight to be decoupled in terms of impact sound is mounted on these support points fitted with elastomer bearings. The dimensions of the individual support points are 53 x 75 mm each (overhang x width). 4 elastomer pads with 53 x 75 mm and 15 mm thick were used in the design variant type S4.
  The z = 1.5 cm thick distance plate FDPL type 15420 (Figure 2) was used between the wall and the stair flight during testing of Egcostep SP Type S4.
- Figure 5 shows the decoupling at the foot of the stair flight. Egcoscal SP in the F-shape variant was used for this purpose. 6 or 4 elastomer bearings, each 53 x 75 x 15 mm, were used in the 15 mm foam plate as with the decoupling of stair flight and stair landing (above).

Stair landing bearing:

- Egcosono SP with 15 mm elastomer bearing (Figure 7)
  Two Egcosono SP decoupling elements, each with an elastomer bearing measuring 118 x 198 mm, were used for the acoustic decoupling of the two projecting stair landing pins installed in the test wall. The elastomer bearings are inserted into an acoustic box made of expanded polypropylene (EPP) with external dimensions of 304 x 160 x 202 mm (L x W x H). The wall thickness in the elastomer bearing area (bottom) was 15 mm and in the back wall area 10 mm. During assembly, the two acoustic boxes were slipped onto the stair landing pins projecting from the reference landing. The stair landing was then inserted into the niche openings in the reference wall and balanced on the opposite side. The stair landing also rested decoupled on the auxiliary wall on two 118 x 198 x 15 mm elastomer bearings. The niche openings were then filled with mortar. There was a z = 1.5 cm thick air gap between the reference wall and the reference stair landing.
- Egcopal SPX with 15 mm elastomer bearing, tested with three different gap spacings z = 1.5 cm, z = 5 cm and z = 10 cm (Figure 8 and Figure 9)
  Two Egcopal SPX decoupling elements were used for the acoustic decoupling of the reference stair landing, each with an elastomer bearing measuring 120 x 170 x 15 mm. The elastomer bearings are each inserted in an acoustic box made of sheet steel with external dimensions of 182 x 132 x 107 mm (L X W X H).

Both acoustic boxes were first mortared into the existing niche openings of the reference wall. The connection between the acoustic box and the stair landing was made using a 390 mm / 420 mm / 450 mm long dowel of type EDM52390/EDM52420/EDM52450 with a diameter of 52 mm, depending on the gap spacing z tested. The dowel was inserted on the stair landing side into a steel sleeve already set in concrete there.
On the auxiliary wall side, the stair landing was again supported in a balanced manner on identical elastomer bearings measuring 120 x 170 x 15 mm.
During testing of Egcopal SPX, the z = 1.5 cm thick distance plate FDPL type 15420 (Figure 2) was inserted between the wall and the stair landing.

- Egcopal SPH with 20 mm elastomer bearing, tested with two different gap spacings z = 5 cm and z = 10 cm (Figure 10 and Figure 11)
  Two Egcopal SPH decoupling elements were used for the acoustic decoupling of the reference stair landing, each with an elastomer bearing measuring 119 x 110 x 20 mm. The elastomer bearings are each inserted in an acoustic box made of sheet steel with external dimensions of 125 x 131.5 x 108 mm (L X W X H). Both acoustic boxes were first mortared into the existing niche openings of the reference wall. The connection between the acoustic box and the stair landing was made using a 420 mm long dowel with a diameter of 52 mm, depending on the gap separation. The dowel was inserted on the stair landing side into a steel sleeve already set in concrete there.
  On the auxiliary wall side, the stair landing was again supported in a balanced manner on identical elastomer bearings measuring 119 x 110 x 20 mm.

- Egcopal SP with 20 mm elastomer bearing, tested with three different gap spacings z = 1.5 cm, z = 5 cm and z = 10 cm (Figure 12 and Figure 13)
  Two Egcopal SP decoupling elements were used for the acoustic decoupling of the reference stair landing, each with an elastomer bearing measuring 119 x 110 x 20 mm. The elastomer bearings are each inserted in an acoustic box made of sheet steel with external dimensions of 125 x 131.5 x 88 mm (L X W X H). Both acoustic boxes were first mortared into the existing niche openings of the reference wall. The connection between the acoustic box and the stair landing was made using a 370 mm / 420 mm long dowel of type EDM32370/EDM32420 (same dowel as for z = 5 cm and z = 10 cm) with a diameter of 32 mm, depending on the gap spacing z tested. The dowel was inserted on the stair landing side into a steel sleeve already set in concrete there. On the auxiliary wall side, the stair landing was again supported in a balanced manner on identical elastomer bearings measuring 119 x 110 x 20 mm.

  During testing of Egcopal SP, the z = 1.5 cm thick distance plate FDPL type 15420 (Figure 2) was inserted between the wall and the stair landing.

- Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm (Figure 14 and Figure 15)

  Two Egcopal SP light decoupling elements were used for the acoustic decoupling of the reference stair landing, each with an elastomer bearing measuring 119 x 110 x 20 mm. The elastomer bearings are each inserted in an acoustic box made of sheet steel with external dimensions of 125 x 131.5 x 88 mm (L X W X H). Both acoustic boxes were first mortared into the existing niche openings of the reference wall. The connection between the acoustic box and the stair landing was made using a 400 mm long dowel of type EDM34400 with a diameter of 34 mm, depending on the gap separation. The dowel was inserted on the stair landing side into a steel sleeve already set in concrete there. On the auxiliary wall side, the stair landing was again supported in a balanced manner on identical elastomer bearings measuring 119 x 110 x 20 mm.

  During testing of Egcopal SP light, the z = 1.5cm thick distance plate FDPL type 15420 (Figure 2) was inserted between the wall and the stair landing.

The installation check and the tests were carried out by U. Pachale and L. Moy in the Empa Building Acoustics Laboratory. Section 3 describes in detail the measurement of impact sound insulation on staircase and flight bearings.

Section 4 lists the measurements carried out and section 5 lists the results obtained. Tables 1 and 2 provide an overview of the products tested. The identification of the respective measurement in column 1 can be found again in section 5 in the tables Table 3 and 4, as well as on the respective measurement data sheets in section 6.

The numerical data, which are only valid for the object measured in the Empa test bench, are decisive. According to standard DIN 7396 [1], the test was carried out on only one bearing, i.e.: several bearings of the same type were not tested.

The standards applicable to this report are listed in section 7.

Table 1: Overview of the measured staircase bearings

Measurement	Test	Additional load [kN]	Test performed on
21956_02.T	Standard stair landing impact sound pressure level	0	03/02/2020
21956_31.T	Egcoscal SP LS 43 kN	0	20/08/2020
21956_32.T		4.4	
21956_33.T		8.8	
21956_34.T		12.8	
21956_35.T	Egcoscal SP LS 61 kN	0	25/08/2020
21956_36.T		7	
21956_37.T		15	
21956_38.T		22	
21956_40.T	Egcostep SP with 15 mm elastomer bearing, version type S6	0	27/10/2020
21956_41.T		5.9	
21956_42.T		11.7	
21956_43.T		17.6	
21956_44.T	Egcostep SP with 15mm elastomer bearing, version type S4	0	27/10/2020
21956_45.T		3.1	
21956_46.T		6.2	
21956_47.T		9.3	
21956_56.T	Standard stair landing impact sound pressure level	0	29/10/2020

Table 2: Overview of the measured stair flight bearings

Measurement	Test	Additional load [kN]	Test performed on
21956_60.T	Egcosono SP with 15 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	22/12/2020
21956_61.T		28.9	
21956_62.T		57.8	
21956_63.T		86.7	04/01/2021
21956_74.T/21956_78.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	16/02/2021
21956_75.T/21956_79.T		22	
21956_76.T/21956_80.T		44.1	
21956_77.T/21956_81.T		66.1	
21956_82.T/21956_86.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 5 cm	0	18/02/2021
21956_83.T/21956_87.T		22	
21956_84.T/21956_88.T		44.7	
21956_85.T/21956_89.T		67.1	
21956_90.T/21956_94.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 10 cm	0	22/02/2021
21956_91.T/21956_95.T		22.8	
21956_92.T/21956_96.T		45.6	
21956_93.T/21956_97.T		68.5	
21956_107.T/21956_111.T	Egcopal SPH with 20 mm elastomer bearing, tested with gap spacing z = 5 cm	0	05/03/2021
21956_108.T/21956_112.T		12.8	
21956_109.T/21956_113.T		25.6	
21956_110.T/21956_114.T		38.4	
21956_99.T/21956_103.T	Egcopal SPH with 20 mm elastomer bearing, tested with gap spacing z = 10 cm	0	04/03/2021
21956_100.T/21956_104.T		13.1	
21956_101.T/21956_105.T		26.2	
21956_102.T/21956_106.T		39.3	
21956_132.T/21956_136.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	18/03/2021
21956_133.T/21956_137.T		12.6	
21956_134.T/21956_138.T		25.2	
21956_135.T/21956_139.T		37.8	
21956_116.T/21956_120.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 5 cm	0	17/03/2021
21956_117.T/21956_121.T		10.3	
21956_118.T/21956_122.T		20.6	
21956_119.T/21956_123.T		30.6	
21956_124.T/21956_128.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 10 cm	0	18/03/2021
21956_125.T/21956_129.T		5.8	
21956_126.T/21956_130.T		11.5	
21956_127.T/21956_131.T		17.3	
21956_141.T/21956_145.T	Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	22/03/2021
21956_142.T/21956_146.T		12.6	
21956_143.T/21956_147.T		25.2	
21956_144.T/21956_148.T		37.8	

Figure 1: Staircase bearing Egcoscal SP LS 43 kN

Figure 2: Distance plate FDPL 15420

Figure 3: Staircase bearing Egcostep SP with 15 mm elastomer bearing, type S6 version, bearing at the top

Figure 4: Detailed view of Egcostep SP staircase bearing with 15 mm elastomer bearing, type S6 version

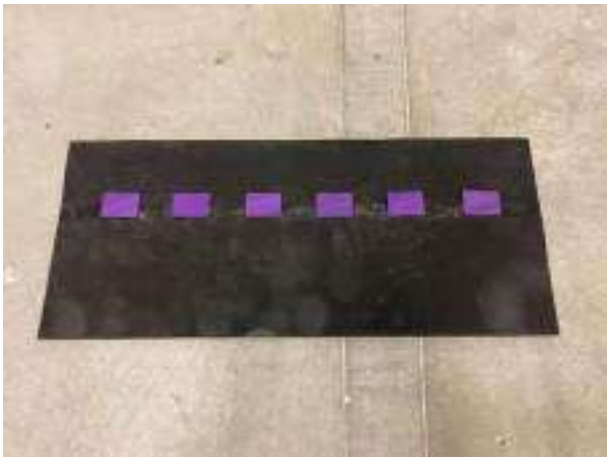


Figure 5: Stair flight decoupling at the foot point with Egcoscal SP with 15 mm elastomer bearing in 53 x 75 mm format, type S6 design

Figure 6 Staircase bearing Egcostep SP with 15 mm elastomer bearing, type S4 version, bearing at the top

Figure 7: Stair landing bearing Egcosono SP with 15 mm elastomer bearing

Figure 8: Stair landing bearing Egcopal SPX with 15 mm elastomer bearing

Figure 9: Stair landing bearing Egcopal SPX with 15 mm elastomer bearing

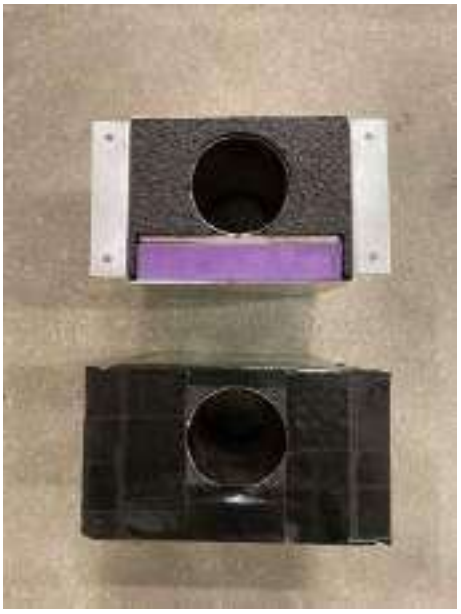


Figure 10: Stair landing bearing Egcopal SPH with 20 mm elastomer bearing

Figure 11: Stair landing bearing Egcopal SPH with 20 mm elastomer bearing (with old description on the test label)

Figure 12: Stair landing bearing Egcopal SP with 20 mm elastomer bearing

Figure 13: Stair landing bearing Egcopal SP with 20 mm elastomer bearing (with old description on the test label)

Figure 14: Stair landing bearing Egcopal SP light with 20 mm elastomer bearing

Figure 15: Stair landing bearing Egcopal SP light with 20 mm elastomer bearing (with old description on the test label)

Figure 16: Staircase bearing Egcoscal SP LS 43 kN in installed state (top)

Figure 17: Staircase bearing Egcoscal SP F-shape for load level 43 kN in installed state (below)

Figure 18: Stair flight with distance plate FDPL 15420 during installation

Figure 19: Installation situation of Egcosono SP stair landing bearing with 15 mm elastomer bearing

Figure 20: Stair landing bearing Egcosono SP with 15 mm elastomer bearing after finished installation, z = 1.5 cm

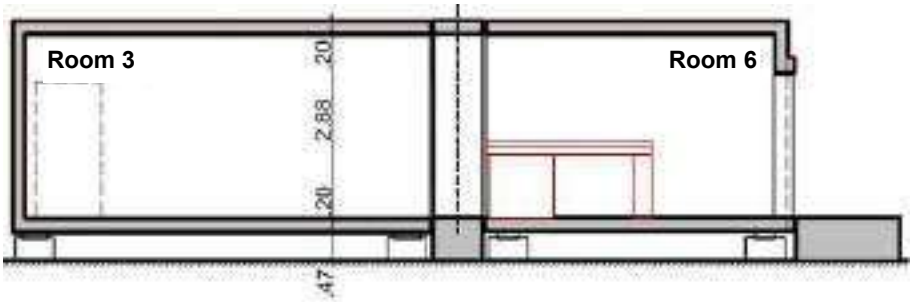
Figure 21: Stair landing bearing Egcopal SPX with 15 mm elastomer bearing during installation

Figure 22: Stair landing bearing Egcopal SP with 20 mm elastomer bearing with dowel and adapter sleeve before installation

2.2 Testing bench

The tests were carried out between 03/02/2020 and 22/03/2021 in the Building Acoustics Laboratory of Empa in Dübendorf. Test rooms 3/6 in sound house 1 were used. The two rooms consist of two spaces acoustically decoupled from the subfloor and a frame for the separating wall, which is also acoustically decoupled from the two rooms (Figure 23). The exterior walls and ceiling of both rooms are made of 20 cm thick reinforced concrete. Receiving room number 3 is cuboid in shape, with dimensions of 6.30 x 4.20 x 2.88 m, and has a volume of 81.5m³ including the frame niche.

For testing the stair and landing bearings, the same reference landing was used at two different positions in the room. Two different stair flight positions were also used. The Egcoscal SP type staircase bearings were tested in the first configuration as shown in Figure 23. The test facility was modified for the testing of the Egcostep SP type staircase bearings, so that for these tests, as well as for the testing of the stair landing bearings, the stair landing was installed in the right half of the room and the stair flight connected from the left. The second configuration is shown in figure 24.



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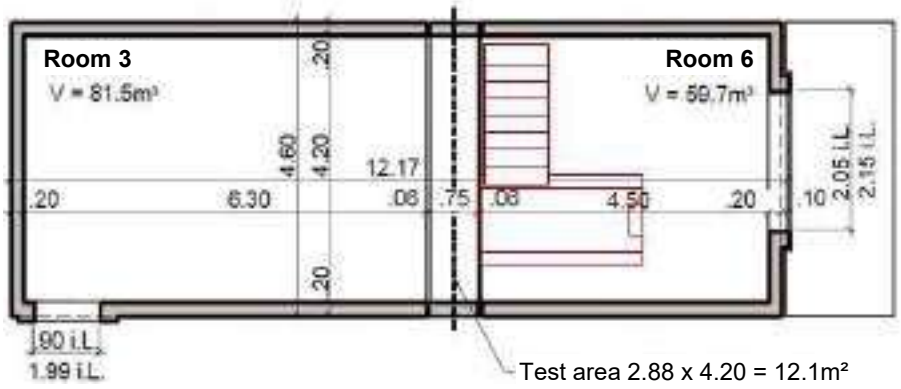
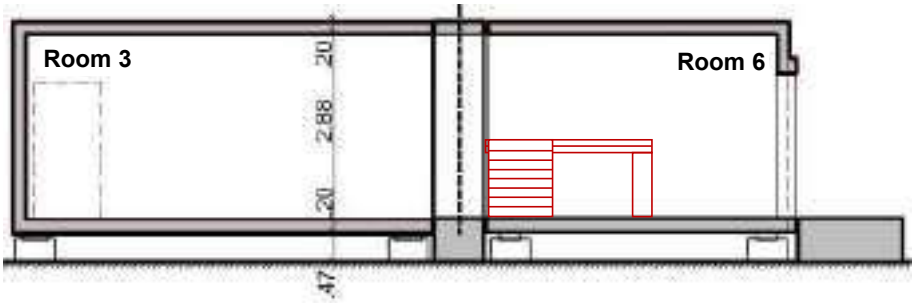


Figure 23: First arrangement of stair flight and stair landing in the test facility



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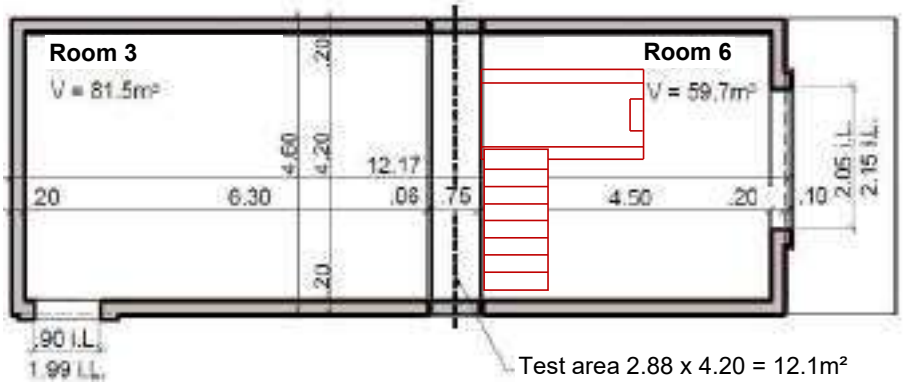


Figure 24: Second arrangement of stair flight and stair landing in the test facility.

2.3 Reference and auxiliary wall

The reference wall was a single-shell, 25 cm thick sand-lime brick wall with the dimensions 2.88 x 4.20 m, which was plastered on one side (Figure 25, Figure 26 and Figure 27). The density of the stones was 1800 kg/m³, giving an area-based mass of 450 kg/m². The wall was connected directly to the frame (Figure 25). As a result of the necessary conversion work, cracks formed at the upper edge of the wall; these were sealed before the tests. After each conversion, the sound insulation value of the wall was re-determined and the updated value used for the correction for the airborne sound path.

The weighted sound insulation value of the wall was

$$R_w = 51 - 53 \text{ dB}.$$

The weighted standard wall impact sound pressure level $L_{n0,wall,w}$ of the wall without a stair landing was determined by exciting the wall with a midi tapping machine at ten positions and, after correction for the difference to a standard tapping machine

$$L_{n0,wall,n} = 73 \text{ dB}.$$

A solid steel scaffold served as an auxiliary wall for the stair landing, which was connected rigidly to the wall, and on which the landing was supported with 4 mm bitumen cardboard. The stair landing with the bearing to be tested was also decoupled from the auxiliary wall (Figure 30) for testing the landing bearings.

Figure 25: Detail of the masonry

Figure 26: View of the wall as seen from the source room. The stair landing and the stair flight were not yet installed.

Figure 27: View of the wall as seen from the receiving room.

Figure 28: First arrangement for testing staircase bearings (configuration 1)

Figure 29: First arrangement for testing staircase bearings and landing bearings (configuration 2)

Figure 30: Auxiliary wall as bearing for reference stair landing 1 for testing stair landing bearings (configuration 2)

2.4 Reference stair flight and stair landing

A **reference staircase landing** was used for the test. The stair landing had a weight of 1285 kg, with half of it exerting a force of 6.3 kN on the wall.

The stair landing was connected rigidly to the wall in configuration 1 for testing the staircase bearings. The stair flight was supported on the side bracket of the stair landing and the unit to be tested was used for decoupling.

The stair landing was decoupled from the wall and the auxiliary wall with the corresponding bearings for testing the stair landing bearings. The same bearings were used for decoupling from the auxiliary wall as for decoupling from the test wall.

A reference stair flight supplied as a prefabricated component by the customer was used.

The **reference stair flight** had a weight of 1468 kg (Figure 33). The stair flight exerted a force of 7.2 kN on the stair landing.

The weighted standard stair landing impact sound pressure level of the reference stair landing was determined by exciting the rigidly installed landing without stair flight at four randomly distributed positions with a standard tapping machine and amounted to

$$L_{n0,landing,w} = 70 \text{ dB}$$

Figure 31: Reference stair flight

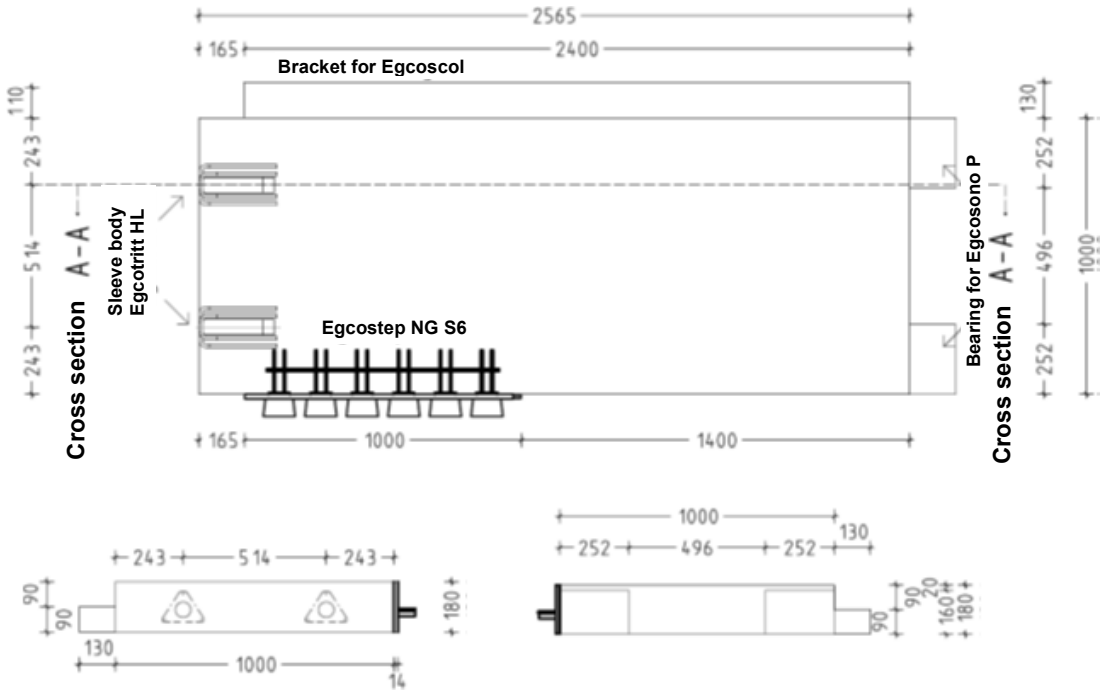


Figure 32: Dimensions of the prefabricated stair landing. In the stair landing, the sleeve bodies for measuring the Egcopal variants (in the picture with the old description Egcotritt HL) as well as the stair bedding of the Egcostep SP were attached directly.

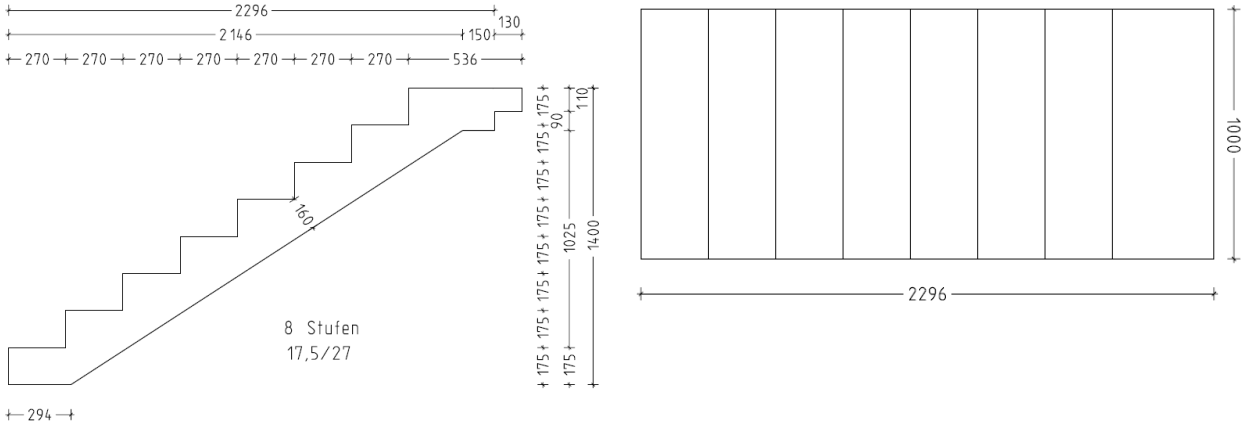


Figure 33: Dimensions of the prefabricated stair flight.

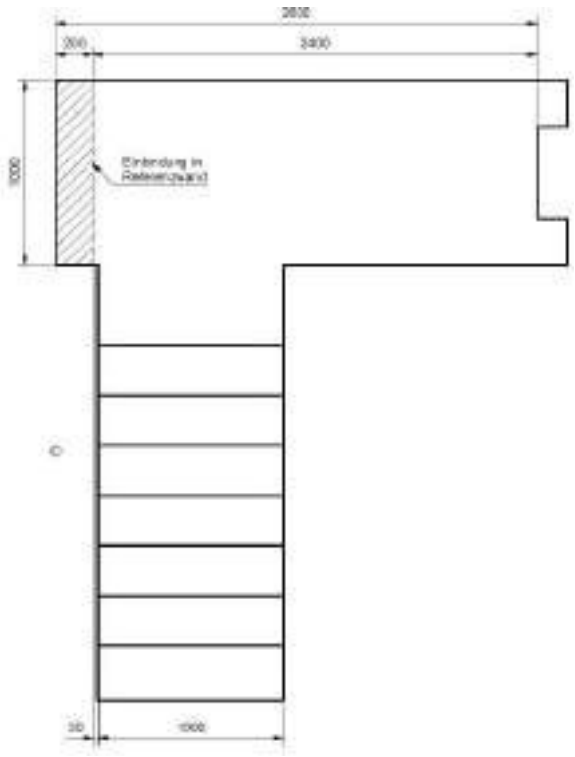


Figure 34: Top view of the stair landing and stair flight cast on site and in combination. The length without wall thickness was 2350 mm. Including the wall thickness of 250 mm, the stair landing length was 2600 mm. Compared to the prefabricated component, the stair landing was designed without brackets.

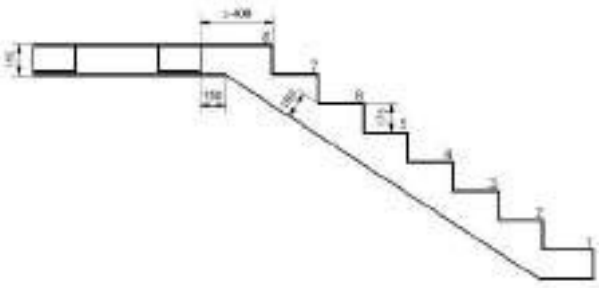


Figure 35: Side view of the stair landing and stair flight cast on site.

2.5 Rigid combination of stair landing and stair flight

The rigid connection of the stair flight to the stair landing was made during the calibration of the test facility by casting the stair flight and stair landing as a combination on site (Figure 34, Figure 35 and Figure 36). The joint between the stair flight and the wall was also designed as an air gap. The previously existing recess between the stair landing and the wall was completely connected to the wall by filling it with concrete. The stair landing was supported on the auxiliary wall and the stair flight on the floor with 4 mm bitumen cardboard.

The weighted standard stair landing impact sound pressure level of the reference stair landing was determined by exciting the rigidly installed flight with a standard tapping machine and amounted to

$$L_{n0,flight,w} = 66 \text{ dB}.$$

Figure 36: Combined stair flight and stair landing cast on site. The recess can be seen above the stair landing. It was concreted over after the stair landing was inserted.

2.6 Device for applying additional loads

The additional loads required by DIN 7396 [1] were generated using a hydraulic ram. This was attached to a double T-beam, which in turn rested on bearings on two opposite test facility walls and was pressed against the test facility ceiling under load.

To test the staircase bearings, the ram exerted a load on the stair flight by means of a square metal profile centrally and above the bearings to be tested at the top step. The ram was decoupled acoustically from the stair flight using a decoupling element (Figure 37). The effect of this decoupling was proven in preliminary tests. An investigation of the flanking path transmission via the load device and test facility ceiling was carried out as part of the tests. The investigation showed that flanking path transmission is negligible.

The additional loads to be applied with the hydraulic ram were specified by the client. In the calculation of the forces effectively acting in the staircase bearing, it was assumed to simplify matters that in this situation the loads applied by the ram completely load the bearing to be tested (reduction factor AF = 1.00 in the conversion of the load levels in section 4.3)

To test the stair landing bearings, the ram loaded the stair landing at a distance of 55 cm from the wall and centred on the longitudinal axis of the stair landing so that the force application point was aligned centrally between the left and right stair landing bearings (Figure 38). The additional loads applied at 55 cm from the wall were referred to as applied additional loads in the report. Based on this, these values were converted with variable reduction factor AF on the basis of the test geometry to the total load actually acting on the bearing. These are given in section 4.3 in the tables of load levels for each test.

Figure 37: Hydraulic ram for applying additional loads on the stair flight (configuration 1)

Figure 38: Applying the additional load on the stair landing (configuration 2)

3 Measurement of impact sound insulation on stair flights and stair landings

3.1 Measurement according to EN ISO 10140-3:2010 [4] and DIN 7396:2016 [1] in the test facility

Stair flights and stair landings with the corresponding decoupling elements are tested according to DIN 7396. The structure to be tested consists of a standardised wall separating two horizontally arranged test areas. The test set-ups differ depending on the decoupling element to be tested:

- The testing of decoupling elements for stair landings requires firstly the measurement on a standardised stair landing that is connected rigidly to the wall, secondly the measurement on a stair landing that is decoupled from the wall and the auxiliary wall with the decoupling elements to be tested, and thirdly a measurement of the wall.
- The testing of decoupling elements for stair flights requires firstly the measurement on a standardised stair flight that is connected rigidly to the stair landing, secondly the measurement on a stair flight that is decoupled from the stair landing and from the test facility floor with the decoupling elements to be tested, and thirdly a measurement of the wall. In this case, the stair landing is connected rigidly to the wall.

Testing is carried out under dead load of the standard stair landing or stair flight and with additional superimposed loads up to the maximum additional load required by the standard. For the measurement, the stair landing is excited successively at four points with standardised tapping machine. If decoupling elements for stair flights are tested, the stair flight is excited with a standardised tapping machine at one point on the top step. In the adjacent receiving room, the impact sound pressure level is recorded for 64 seconds in the one-third octave bands from 50 to 5000 Hz for each tapping machine position using a rotary microphone and, if necessary, the influence of the background noise as well as the airborne sound component through the wall is corrected mathematically.
The **standard impact sound pressure level L_n** is calculated from the individual measurements of the four or one tapping machine position(s), together with the values of the reverberation time measurement of the receiving room.

The standard impact sound pressure level $L_{n0,wall}$ of the wall without a stair landing is measured successively at ten positions with a so-called midi tapping machine, which allows horizontal excitation.

Individual assessment according to EN ISO 717-2:2013[10]:
To characterise the impact sound transmission, a single figure data is calculated according to the procedure described in the standard EN ISO 717-2 [10]. The size is designated with the additional index w ("weighted") and is called in the present case:

3.2 Weighted standard wall/flight/landing impact sound pressure level

$L_{n,wall/landing/flight,w}$ "weighted standard wall/flight/landing impact sound pressure level".

The impact sound insulation is better, the lower *the weighted standard impact sound pressure level of the tested structure* ***$L_{n,wall/landing/flight,w}$.***

3.3 Weighted impact sound pressure level reduction

The "**weighted impact sound pressure level reduction**" $\Delta L_{landing/flight}$ indicates how much the standard wall impact sound pressure level was improved by the installation of the reference stair landing with the decoupling to be tested or it indicates how much the standard stair landing impact sound pressure level was improved by the installation of the reference stair flight with the decoupling to be tested. The impact sound pressure level reduction is an informative value.

The improvement *in the impact sound insulation through the decoupling element* ***is better, the greater*** *the weighted impact sound pressure level reduction* $\Delta L_{landing/flight}$.

3.4 Weighted impact sound pressure level difference

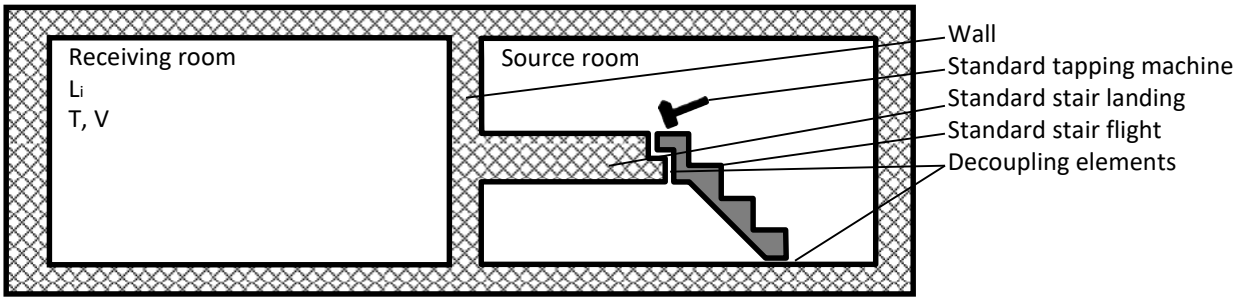
The "**weighted impact sound pressure level difference**" $\Delta L^*_{landing/flight}$ indicates how much the standard landing impact sound pressure level has been improved by the installation of the decoupling to be tested or it indicates how much the standard flight impact sound pressure level has been improved by the installation of the decoupling to be tested. **The impact pressure sound level difference is the normative value and is used for a direct comparison of products.**

The improvement *in the impact sound insulation through the decoupling element* ***is better, the greater*** *the weighted impact sound pressure level reduction* $\Delta L^*_{landing/flight}$.

Measurement in test bench

Applicable standards: Measurement EN ISO 10140-4:2010 [6] and DIN 7396:2016 [1]
Evaluation EN ISO 717-2:2013 [10]

Test arrangement (example for decoupled stair flight):



Receiving room volume	V	m^3
Reference equivalent sound absorption area	$A_0 = 10$	m^2
Frequency-dependent values (18 values each for the one-third-octave bands 100-5000 Hz):		
Average impact sound pressure level in the receiving room	L_i	dB
Reverberation time in the receiving room	T	s
Equivalent sound absorption area in the receiving room	$A = 0.16 \frac{V}{T}$	m^2
Standard impact sound pressure level of the reference object (wall or rigidly installed stair landing or stair flight)	$L_{n0,object} = L_{i0} + 10lg\frac{A}{A_0}$	dB
Standard impact sound pressure level of the test object decoupled with installed decoupling element	$L_{n,object} = L_i + 10lg\frac{A}{A_0}$	dB
Impact sound pressure level reduction/impact sound pressure level difference	$\boldsymbol{\Delta L_{obj} = L_{n0,obj} - L_{n,obj}}$	dB

Weighted normalized impact sound pressure levels (single figure data):

- with decoupling element	$L_{n,w}$		dB
- of the reference ceiling according to EN ISO 717-2	$L_{n,r,0,w}$	$= 78$	dB
- of the "reference wall" or the combination of "reference wall and rigidly connected landing", which are assumed to have the same standard impact sound pressure level as the reference ceiling according to ISO 717-2 with the decoupled connected stair landing or stair flight	$\boldsymbol{L_{n,r,w}}$		dB
Weighted impact sound pressure level reduction	$\boldsymbol{\Delta L_w}$	$= 78 - L_{n,r,w}$	dB

4 Measurements carried out

4.1 Standard flight impact sound pressure level

To determine the standard flight impact sound pressure level, the stair flight was excited at the top step using a standard tapping machine. Figure 39 and Figure 40 show the installation situation and the position of the tapping machine on the stair flight. The tapping machine was located centrally on the top step of the stair flight and was shielded from airborne noise with an enclosure. The installation situation of the stair flight can be seen in Figure 41.

Figure 39: Overview of installation situation – measurement of stair flight impact sound pressure level

Figure 40: Position and encapsulation of the tapping machine on reference stair flight 1

Figure 41: Installation situation stair flight

4.2 Standard landing impact sound pressure level

To determine the standard landing impact sound pressure level, the stair landing was excited with the tapping machine in turn at four different positions.

Figure 42: Overview of the installation situation and tapping machine positions on the stair landing

Figure 42 shows the installation situation with two of the four tapping machine positions used. The tapping machine positions were randomly distributed on the stair landing within the framework of the boundary conditions specified in the standard and were precisely measured for the purpose of reproducibility.

The airborne sound radiation of the tapping machine was reduced by means of two similar enclosures.

4.3 Load levels

The tables with the load levels used are given below. A static conversion of the applied load to the effective total load acting on the bearing was not used to measure the stair flight bearings. Therefore, the reduction factor in Table 1 to Table 4 was set to AF = 1.0 here. The applied load was converted to the **effective total load per stair landing bearing** based on the test geometry (Table 5 to Table 14) for measurement of the stair landing bearings. The manufacturer's information on the test geometries was used to calculate the total load effectively acting at the bearing point.

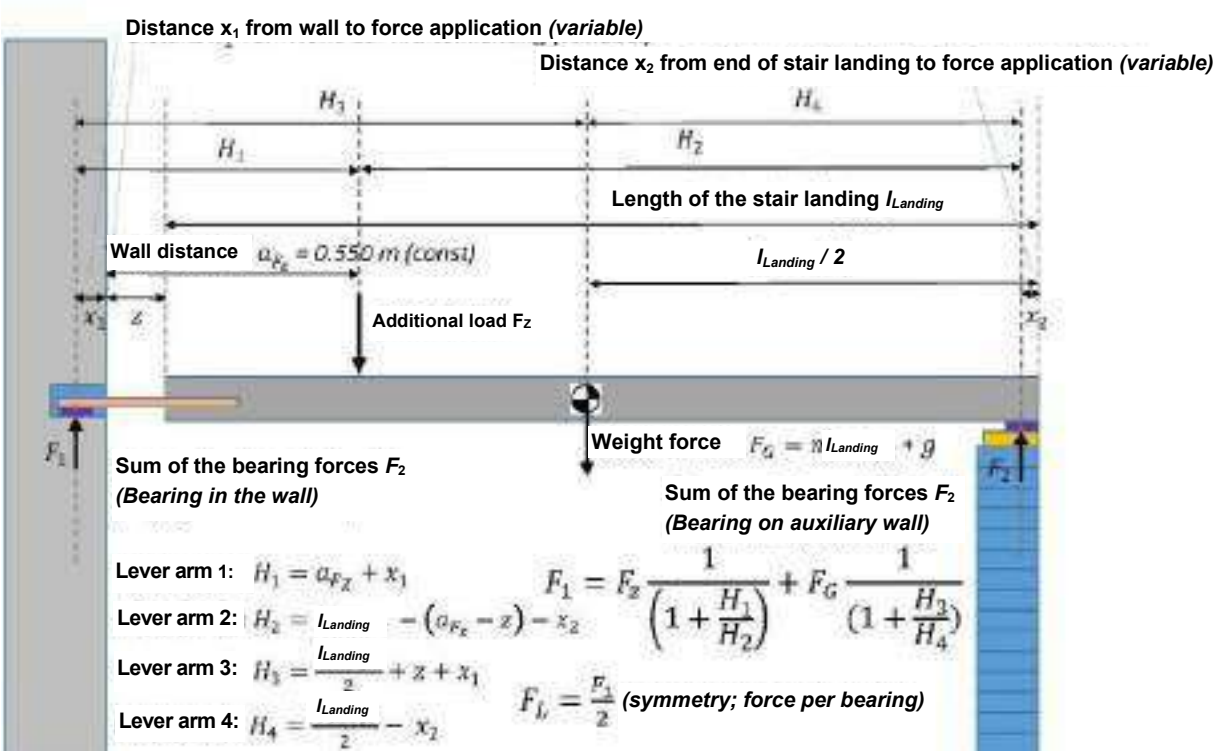


Figure 43: Conversion of the loads from the applied additional load to the total load effectively acting on the bearing per stair landing bearing.

Load levels, staircase bearings:

Table 1: Load levels Egcoscal SP – Elastomer bearing 15 mm for load level 43 kN

Load level	**Dead load stair flight**			**Additional load on top step**			**n**	**Total load per staircase bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1468	14.4	7.2	0.0	1.00	0.0	1	7.2
2				4.4		4.4		11.6
3				8.8		8.8		16.0
4				12.8		12.8		20.0

Table 2: Load levels Egcoscal SP – Elastomer bearing 15 mm for load level 61 kN

Load level	**Dead load stair flight**			**Additional load on top step**			**n**	**Total load per staircase bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1468	14.4	7.2	0.0	1.00	0.0	1	7.2
2				7.0		7.0		14.2
3				15.0		15.0		22.2
4				22.0		22.0		29.2

Table 3: Load levels Egcostep SP with 15 mm elastomer bearings, version S6

Load level	**Dead load stair flight**			**Additional load on top step**			**n**	**Total load per staircase bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1468	14.4	7.2	0.0	1.00	0.0	1	7.2
2				5.9		5.9		13.1
3				11.7		11.7		18.9
4				17.6		17.6		24.8

Table 4: Load levels Egcostep SP with 15 mm elastomer bearings, version S4

Load level	**Dead load stair flight**			**Additional load on top step**			**n**	**Total load per staircase bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1468	14.4	7.2	0.0	1.00	0.0	1	7.2
2				3.1		3.1		10.3
3				6.2		6.2		13.4
4				9.3		9.3		16.5

Load levels stair landing bearing:

Table 5: Load levels Egcosono SP with 15 mm elastomer bearing – with gap spacing z = 1.5 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	5.9	0.0	1.32	0.0	2	3.0
2				28.9		21.9		13.9
3				57.8		43.9		24.9
4				86.7		65.8		35.9

Table 6: Load levels Egcopal SPX with 15 mm elastomer bearing – with gap spacing z = 1.5 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	6.0	0.0	1.31	0.0	2	3.0
2				22.0		16.8		11.4
3				44.1		33.7		19.8
4				66.1		50.5		28.2

Table 7: Load levels Egcopal SPX with 15 mm elastomer bearing – with gap spacing z = 5 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	5.9	0.0	1.30	0.0	2	2.9
2				22.0		16.9		11.4
3				44.7		34.3		20.1
4				67.1		51.4		28.7

Table 8: Load levels Egcopal SPX with 15 mm elastomer bearing – with gap spacing z = 10 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	5.8	0.0	1.30	0.0	2	2.9
2				22.8		17.6		11.7
3				45.6		35.2		20.5
4				68.5		52.8		29.3

Table 9: Load levels Egcopal SPH with 20 mm elastomer bearing – with gap spacing z = 5 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	5.9	0.0	1.30	0.0	2	2.9
2				12.8		9.8		7.9
3				25.6		19.6		12.8
4				38.4		29.4		17.7

Table 10: Load levels Egcopal SPH with 20 mm elastomer bearing – with gap spacing z = 10 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	5.8	0.0	1.30	0.0	2	2.9
2				13.1		10.1		7.9
3				26.2		20.2		13.0
4				39.3		30.3		18.0

Table 11: Load levels Egcopal SP with 20 mm elastomer bearing – with gap spacing z = 1.5 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	6.3	0.0	1.31	0.0	2	3.0
2				12.6		9.6		7.8
3				25.2		19.2		12.6
4				37.8		28.9		17.4

Table 12: Load levels Egcopal SP with 20 mm elastomer bearing – with gap spacing z = 5 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	6.3	0.0	1.30	0.0	2	2.9
2				10.3		7.9		6.9
3				20.6		15.8		10.8
4				30.6		23.5		14.7

Table 13: Load levels Egcopal SP with 20 mm elastomer bearing – with gap spacing z = 10 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	6.3	0.0	1.30	0.0	2	2.9
2				5.8		4.5		5.1
3				11.5		8.9		7.3
4				17.3		13.3		9.6

Table 14: Load levels Egcopal SP light with 20 mm elastomer bearing – with gap spacing z = 1.5 cm

Load level	**Dead load stair landing**			**Additional load 55 cm away from wall and centred on stair landing centre line**			**n**	**Total load per stair landing bearing**
	total		**effective**	**total**	**AF**	**effective**		
	[kg]	**[kN]**	**[kN]**	**[kN]**	**[-]**	**[kN]**	**[-]**	**[kN]**
1	1285	12.6	6.3	0.0	1.30	0.0	2	2.9
2				12.6		9.7		7.3
3				25.2		19.4		12.6
4				37.8		29.2		17.5

4.4 Airborne sound correction

The sound pressure level in the receiving room was also corrected for both background noise and airborne sound. The correction of the airborne sound component was based on the measured airborne sound insulation of the wall and the respective sound pressure level in the source room measured during the impact sound measurement.

5 Results

Single figure data

Table 3 and Table 4 contain the single figure data of the standard impact sound insulation, the impact sound pressure level difference and the impact sound pressure level reduction for the individual bearings tested depending on the additional load applied.

The measurement data sheets in section 6 contain detailed information on the individual measurements. The markings in column 1 of Table 3 and Table 4 correspond to the markings on the measurement data sheets (indication at the bottom right of the data sheet)

Measurement uncertainty

Table 5 and Table 6 give all the results together with the associated measurement uncertainties. According to EN ISO 12999-1:2014-09, a distinction is made between the following measurement situations, among others, for which corresponding standard uncertainties must be taken into account:

- The nominally same test object is tested in different laboratories. The deviation between the results is described by the reproducibility standard deviation. This is determined in round robin tests and on a component-specific basis.
- The same test object is tested by different measurement teams. The deviation between the results is described by the in-situ standard uncertainty. This is relevant, for example, for measurements in construction.
- The same test object is tested in the same laboratory by the same employee and without disassembly and reassembly. The deviation between the results is described by the repeatable standard deviation.

There are no detailed data from round robin tests on the reproducibility standard deviation for the test object investigated. Therefore, for $L_{n,w,}$ $\Delta L_{w,flight/landing}$ and $\Delta L^*_{w,flight/landing}$ the reproducibility standard deviation for single figure data according to EN ISO 12999-1 is used.

An expansion factor of k = 1.96 was used, giving a 95% confidence level assuming a two-sided test. A $L_{n,r,0,w}$ = 77.7 dB was used. The actual measurement uncertainties for the tested product class may be larger.

In order to gain an impression of the repeatable standard deviation in the test bench used, the same staircase bearing was tested earlier a total of three times by the same test engineer, with it being removed and reinstalled between tests. It was demonstrated that the values for $L_{n,w}$, $L_{n,w}+C_I$, ΔL_W and ΔL^*_W differ by less than 1 dB.

5.1 Single figure data

Table 3: Results staircase bearings

Measurement	Bearing	Additional load [kN]	Total load [kN]	$L_{n,w}$ (C_I) [dB]	$\Delta L_{w,flight}$ ($C_{I,\Delta}$) [dB]	$\Delta L^*_{w,flight}$ (C_{I,Δ^*}) [dB]
21956_31.T	Egcoscal SP LS 43 kN	0	7.2	37 (-1)	30 (-11)	27 (-12)
21956_32.T		4.4	11.6	37 (1)	30 (-12)	27 (-13)
21956_33.T		8.8	16.0	38 (3)	28 (-13)	25 (-14)
21956_34.T		12.8	20.0	39 (3)	27 (-12)	24 (-14)
21956_35.T	Egcoscal SP LS 61 kN	0	7.2	38 (-1)	30 (-11)	27 (-12)
21956_36.T		7	14.2	39 (3)	26 (-12)	24 (-15)
21956_37.T		15	22.2	40 (1)	27 (-12)	24 (-13)
21956_38.T		22	29.2	40 (1)	27 (-11)	24 (-13)
21956_40.T	Egcostep SP with 15 mm elastomer bearing, version type S6	0	7.2	42 (-4)	28 (-7)	22 (-8)
21956_41.T		5.9	13.1	42 (-3)	28 (-8)	22 (-9)
21956_42.T		11.7	18.9	42 (-3)	27 (-8)	21 (-9)
21956_43.T		17.6	24.8	43 (-3)	27 (-9)	21 (-10)
21956_44.T	Egcostep SP with 15 mm elastomer bearing, version type S4	0	7.2	42 (-4)	29 (-8)	23 (-10)
21956_45.T		3.1	10.3	41 (-3)	29 (-8)	23 (-9)
21956_46.T		6.2	13.4	42 (-4)	28 (-7)	23 (-10)
21956_47.T		9.3	16.5	42 (-4)	28 (-8)	22 (-9)

Table 4: Results landing bearings

Measurement	Bearing	Additional load [kN]	Total load [kN]	$L_{n,w}$ (C_I) [dB]	$\Delta L_{w,landing}$ ($C_{I,\Delta}$) [dB]	$\Delta L^*_{w,landing}$ (C_{I,Δ^*}) [dB]
21956_60.T	Egcosono SP with 15 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	3.0	40 (-4)	33 (-8)	29 (-10)
21956_61.T		28.9	13.9	43 (-4)	30 (-8)	26 (-10)
21956_62.T		57.8	24.9	44 (-4)	29 (-7)	25 (-9)
21956_63.T		86.7	35.9	44 (-3)	29 (-8)	25 (-10)
21956_74.T/21956_78.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	3.0	40 (0)	34 (-12)	29 (-10)
21956_75.T/21956_79.T		22	11.4	43 (-1)	31 (-12)	27 (-11)
21956_76.T/21956_80.T		44.1	19.8	43 (-1)	30 (-10)	26 (-9)
21956_77.T/21956_81.T		66.1	28.2	44 (-2)	30 (-10)	26 (-9)
21956_82.T/21956_86.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 5 cm	0	2.9	41 (-1)	33 (-12)	29 (-11)
21956_83.T/21956_87.T		22	11.4	42 (-1)	31 (-11)	27 (-10)
21956_84.T/21956_88.T		44.7	20.1	43 (-2)	30 (-9)	26 (-9)
21956_85.T/21956_89.T		67.1	28.7	44 (-2)	29 (-9)	26 (-9)
21956_90.T/21956_94.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 10 cm	0	2.9	41 (0)	33 (-12)	29 (-11)
21956_91.T/21956_95.T		22.8	11.7	43 (-1)	30 (-10)	27 (-10)
21956_92.T/21956_96.T		45.6	20.5	43 (-1)	29 (-8)	27 (-10)
21956_93.T/21956_97.T		68.5	29.3	44 (-2)	29 (-9)	26 (-9)
21956_107.T/21956_111.T	Egcopal SPH with 20 mm elastomer bearing, tested with gap spacing z = 5 cm	0	2.9	39 (0)	35 (-13)	31 (-12)
21956_108.T/21956_112.T		12.8	7.9	39 (-1)	35 (-11)	30 (-10)
21956_109.T/21956_113.T		25.6	12.8	40 (-1)	34 (-11)	30 (-11)
21956_110.T/21956_114.T		38.4	17.7	39 (0)	34 (-11)	30 (-11)
21956_99.T/21956_103.T	Egcopal SPH with 20 mm elastomer bearing, tested with gap spacing z = 10 cm	0	2.9	39 (1)	35 (-14)	31 (-12)
21956_100.T/21956_104.T		13.1	7.9	39 (0)	34 (-11)	30 (-10)
21956_101.T/21956_105.T		26.2	13.0	39 (0)	34 (-11)	30 (-11)
21956_102.T/21956_106.T		39.3	18.0	40 (0)	34 (-12)	30 (-11)

Table 4: Results landing bearings (cont.)

Measurement	Bearing	Additional load [kN]	Total load [kN]	$L_{n,w}$ (C_I) [dB]	$\Delta L_{w,landing}$ ($C_{I,\Delta}$) [dB]	$\Delta L^*_{w,landing}$ (C_{I,Δ^*}) [dB]
21956_132.T/21956_136.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	3.0	34(-1)	38 (-10)	34 (-10)
21956_133.T/21956_137.T		12.6	7.8	36 (-2)	37 (-10)	33 (-10)
21956_134.T/21956_138.T		25.2	12.6	36 (-1)	36 (-9)	32 (-10)
21956_135.T/21956_139.T		37.8	17.4	37 (-2)	36 (-9)	32 (-10)
21956_116.T/21956_120.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 5 cm	0	2.9	35 (-2)	37 (-10)	34 (-11)
21956_117.T/21956_121.T		10.3	6.9	36 (-2)	36 (-9)	33 (-11)
21956_118.T/21956_122.T		20.6	10.8	36 (-2)	36 (-9)	32 (-10)
21956_119.T/21956_123.T		30.6	14.7	37 (-2)	35 (-9)	32 (-11)
21956_124.T/21956_128.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 10 cm	0	2.9	34 (-2)	38 (-9)	35 (-11)
21956_125.T/21956_129.T		5.8	5.1	34 (-2)	38 (-9)	35 (-11)
21956_126.T/21956_130.T		11.5	7.3	34 (-2)	38 (-9)	35 (-11)
21956_127.T/21956_131.T		17.3	9.6	34 (-2)	38 (-8)	35 (-11)
21956_141.T/21956_145.T	Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	2.9	38 (-2)	35 (-10)	31 (-11)
21956_142.T/21956_146.T		12.6	7.3	37 (-2)	35 (-9)	31 (-10)
21956_143.T/21956_147.T		25.2	12.6	38 (-3)	35 (-9)	31 (-10)
21956_144.T/21956_148.T		37.8	17.5	38 (-3)	34 (-8)	30 (-9)

5.2 Measurement uncertainty

Below, the measurement uncertainty for all single figure data is given according to EN ISO 12999-1 [11], section 7.3 for situation A. An expansion factor of k = 1.96 was used, which achieves a 95% confidence level assuming a two-sided test.

Table 5: Measurement results staircase bearings with reproducibility standard deviation according to EN ISO 12999-1 [11]

Measurement	Bearing	Additional load [kN]	Total load [kN]	$L_{n,w}$ ± U [dB]	$\Delta L_{w,flight}$ ± U [dB]	$\Delta L^*_{w,flight}$ ± U [dB]
21956_31.T	Egcoscal SP LS 43 kN	0	7.2	36.4 ±2.9	30.4 ±2.2	27.4 ±2.2
21956_32.T		4.4	11.6	36.7±2.9	30.0 ±2.2	27.0 ±2.2
21956_33.T		8.8	16.0	38 .0 ±2.9	27.7 ±2.2	24.8 ±2.2
21956_34.T		12.8	20.0	38.7 ±2.9	27.2 ±2.2	24.2 ±2.2
21956_35.T	Egcoscal SP LS 61 kN	0	7.2	37.2 ±2.9	30.0 ±2.2	27.0 ±2.2
21956_36.T		7	14.2	39.0±2.9	26.5 ±2.2	23.7 ±2.2
21956_37.T		15	22.2	39.2 ±2.9	27.2 ±2.2	24.2 ±2.2
21956_38.T		22	29.2	39.6 ±2.9	26.7 ±2.2	23.9 ±2.2
21956_40.T	Egcostep SP with 15 mm elastomer bearing, version type S6	0	7.2	41.1 ±2.9	28.5 ±2.2	22.6 ±2.2
21956_41.T		5.9	13.1	41.3 ±2.9	28.1 ±2.2	22.2 ±2.2
21956_42.T		11.7	18.9	41.8 ±2.9	27.4 ±2.2	21.5 ±2.2
21956_43.T		17.6	24.8	42.8 ±2.9	26.9 ±2.2	20.8 ±2.2
21956_44.T	Egcostep SP with 15 mm elastomer bearing, version type S4	0	7.2	41.2 ±2.9	28.7 ±2.2	23.2 ±2.2
21956_45.T		3.1	10.3	40.9 ±2.9	28.8 ±2.2	23.3 ±2.2
21956_46.T		6.2	13.4	41.1 ±2.9	28.6 ±2.2	22.9 ±2.2
21956_47.T		9.3	16.5	41.4 ±2.9	28.1 ±2.2	22.4 ±2.2

Table 6: Measurement results landing bearings with reproducibility standard deviation according to EN ISO 12999-1 [11]

Measurement	Bearing	Additional load [kN]	Total load [kN]	$L_{n,w}$ ± U [dB]	$\Delta L_{w,landing}$ ± U [dB]	$\Delta L^*_{w,landing}$ ± U [dB]
21956_60.T	Egcosono SP with 15 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	3.0	39.2 ±2.9	33.1 ±2.2	29.2 ±2.2
21956_61.T		28.9	13.9	42.3 ±2.9	30.2 ±2.2	26.0 ±2.2
21956_62.T		57.8	24.9	43.1 ±2.9	29.5 ±2.2	25.2 ±2.2
21956_63.T		86.7	35.9	43.6 ±2.9	29.0 ±2.2	24.8 ±2.2
21956_74.T/21956_78.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	3.0	39.7 ±2.9	33.7 ±2.2	29.2 ±2.2
21956_75.T/21956_79.T		22	11.4	42.5 ±2.9	31.0 ±2.2	26.7 ±2.2
21956_76.T/21956_80.T		44.1	19.8	42.9 ±2.9	30.4 ±2.2	26.3 ±2.2
21956_77.T/21956_81.T		66.1	28.2	43.3 ±2.9	29.7 ±2.2	25.8 ±2.2
21956_82.T/21956_86.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 5 cm	0	2.9	40.1 ±2.9	33.3 ±2.2	28.9 ±2.2
21956_83.T/21956_87.T		22	11.4	41.7 ±2.9	31.1 ±2.2	27.6 ±2.2
21956_84.T/21956_88.T		44.7	20.1	42.8 ±2.9	30.0 ±2.2	26.6 ±2.2
21956_85.T/21956_89.T		67.1	28.7	43.4 ±2.9	29.3 ±2.2	26.1 ±2.2
21956_90.T/21956_94.T	Egcopal SPX with 15 mm elastomer bearing, tested with gap spacing z = 10 cm	0	2.9	40.4 ±2.9	32.7 ±2.2	29.1 ±2.2
21956_91.T/21956_95.T		22.8	11.7	42.5 ±2.9	30.1 ±2.2	26.9 ±2.2
21956_92.T/21956_96.T		45.6	20.5	43.0 ±2.9	29.6 ±2.2	26.7 ±2.2
21956_93.T/21956_97.T		68.5	29.3	43.3 ±2.9	29.2 ±2.2	26.4 ±2.2
21956_107.T/21956_111.T	Egcopal SPH with 20 mm elastomer bearing, tested with gap spacing z = 5 cm	0	2.9	38.2 ±2.9	34.9 ±2.2	31.3 ±2.2
21956_108.T/21956_112.T		12.8	7.9	38.4 ±2.9	34.7 ±2.2	30.5 ±2.2
21956_109.T/21956_113.T		25.6	12.8	39.1 ±2.9	33.9 ±2.2	29.8 ±2.2
21956_110.T/21956_114.T		38.4	17.7	38.9 ±2.9	33.9 ±2.2	30.1 ±2.2
21956_99.T/21956_103.T	Egcopal SPH with 20 mm elastomer bearing, tested with gap spacing z = 10 cm	0	2.9	38.2 ±2.9	34.8 ±2.2	31.5 ±2.2
21956_100.T/21956_104.T		13.1	7.9	38.8 ±2.9	34.1 ±2.2	30.4 ±2.2
21956_101.T/21956_105.T		26.2	13.0	38.8 ±2.9	34.0 ±2.2	30.3 ±2.2
21956_102.T/21956_106.T		39.3	18.0	39.1 ±2.9	33.7 ±2.2	30.2 ±2.2

Table 6: Measurement results landing bearings with reproducibility standard deviation according to EN ISO 12999-1 [11] (cont.)

Measurement	Bearing	Additional load [kN]	Total load [kN]	$L_{n,w}$ ± U [dB]	$\Delta L_{w,landing}$ ± U [dB]	$\Delta L^*_{w,landing}$ ± U [dB]
21956_132.T/21956_136.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	3.0	33.9 ±2.9	38.1 ±2.2	34.4 ±2.2
21956_133.T/21956_137.T		12.6	7.8	35.5 ±2.9	36.7 ±2.2	32.8 ±2.2
21956_134.T/21956_138.T		25.2	12.6	36.0 ±2.9	36.5 ±2.2	32.5 ±2.2
21956_135.T/21956_139.T		37.8	17.4	36.6 ±2.9	35.8 ±2.2	32.0 ±2.2
21956_116.T/21956_120.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 5 cm	0	2.9	34.5 ±2.9	37.4 ±2.2	34.3 ±2.2
21956_117.T/21956_121.T		10.3	6.9	35.5 ±2.9	36.5 ±2.2	33.0 ±2.2
21956_118.T/21956_122.T		20.6	10.8	36.0 ±2.9	36.1 ±2.2	32.4 ±2.2
21956_119.T/21956_123.T		30.6	14.7	36.3 ±2.9	35.6 ±2.2	32.1 ±2.2
21956_124.T/21956_128.T	Egcopal SP with 20 mm elastomer bearing, tested with gap spacing z = 10 cm	0	2.9	33.3 ±2.9	38.4 ±2.2	35.3 ±2.2
21956_125.T/21956_129.T		5.8	5.1	33.4 ±2.9	38.3 ±2.2	35.2 ±2.2
21956_126.T/21956_130.T		11.5	7.3	33.9 ±2.9	37.8 ±2.2	34.8 ±2.2
21956_127.T/21956_131.T		17.3	9.6	33.9 ±2.9	38.0 ±2.2	34.8 ±2.2
21956_141.T/21956_145.T	Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm	0	2.9	37.1 ±2.9	35.3 ±2.2	31.1 ±2.2
21956_142.T/21956_146.T		12.6	7.3	37.0 ±2.9	35.2 ±2.2	31.1 ±2.2
21956_143.T/21956_147.T		25.2	12.6	37.4 ±2.9	34.9 ±2.2	31.0 ±2.2
21956_144.T/21956_148.T		37.8	17.5	37.8 ±2.9	34.3 ±2.2	30.5 ±2.2

6 Measurement data sheets

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Stair landing

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Stair flight did not rest on stair landing

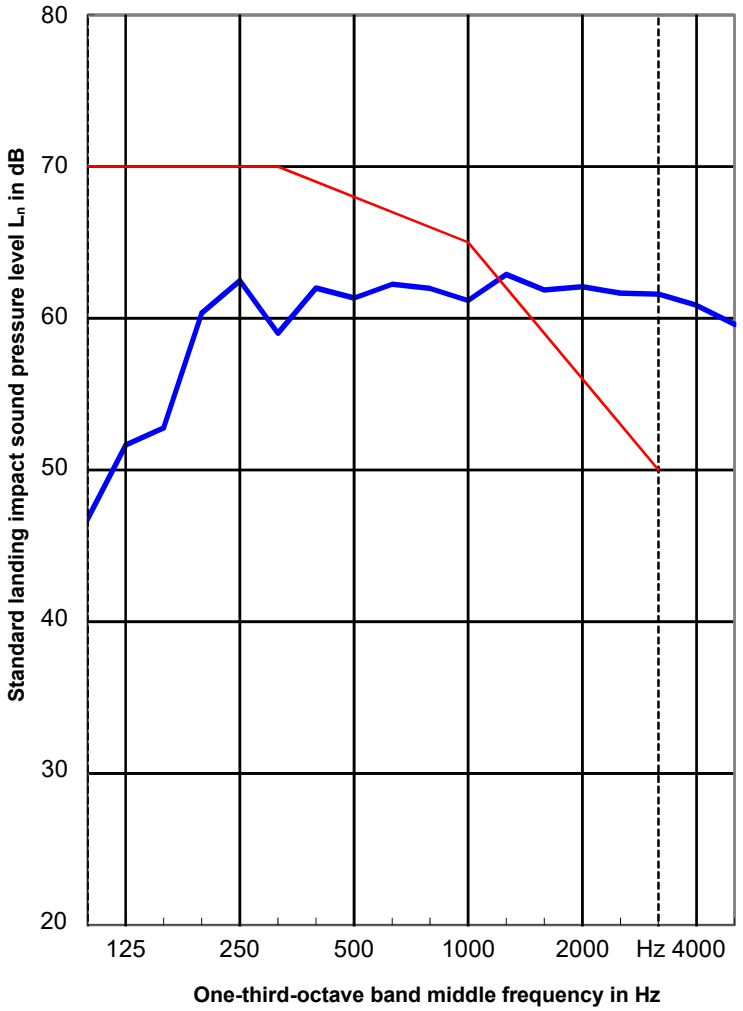
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 03/02/2020**
Temperature: 25.5 °C, relative humidity: 47.6%, air pressure: 964 hPa

$L_{n0,w,landing}$ = 68 dB

$C_{I0,landing}$ = -10 dB

$L_{n0,w,landing}$ + $C_{I0,landing}$ = 58 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]
100	46.8
125	51.7
160	52.8
200	60.3
250	62.5
315	59.0
400	62.0
500	61.3
630	62.3
800	62.0
1000	61.2
1250	62.9
1600	61.9
2000	62.1
2500	61.7
3150	61.6
4000	60.9
5000	59.6



<: Limitation by background noise or flanking path

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Rigid combination of stair flight and stair landing

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Rigid combination of stair landing and stair flight according to DIN 7396

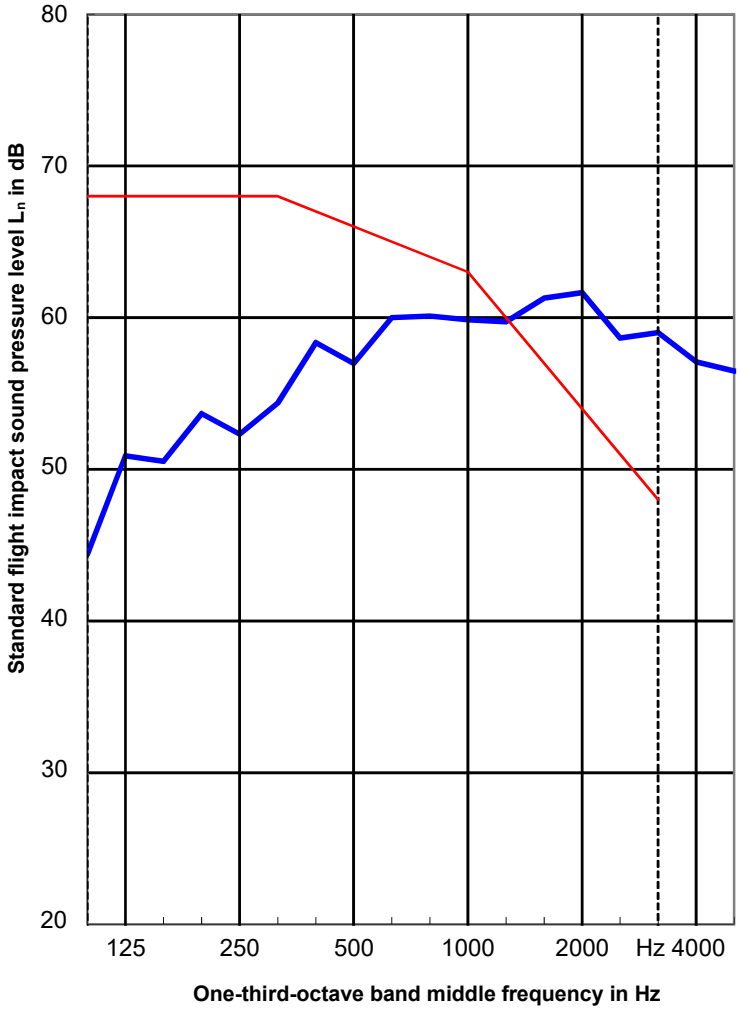
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 26/07/2019**
Temperature: 25.8 °C, relative humidity: 56.6%, air pressure: 957 hPa

$L_{n0,w,flight}$ = 66 dB

$C_{I0,flight}$ = -11 dB

$L_{n0,w,flight}$ + $C_{I0,flight}$ = 55 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]
100	44.4
125	50.9
160	50.5
200	53.7
250	52.3
315	54.4
400	58.4
500	57.0
630	60.0
800	60.1
1000	59.8
1250	59.7
1600	61.3
2000	61.7
2500	58.7
3150	59.0
4000	57.1
5000	56.5



<: Limitation by background noise or flanking path

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Standard wall impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Sand-lime brick wall

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing was not connected

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 09/01/2019**
Temperature: 22.3 °C, relative humidity: 36%, air pressure: 936 hPa

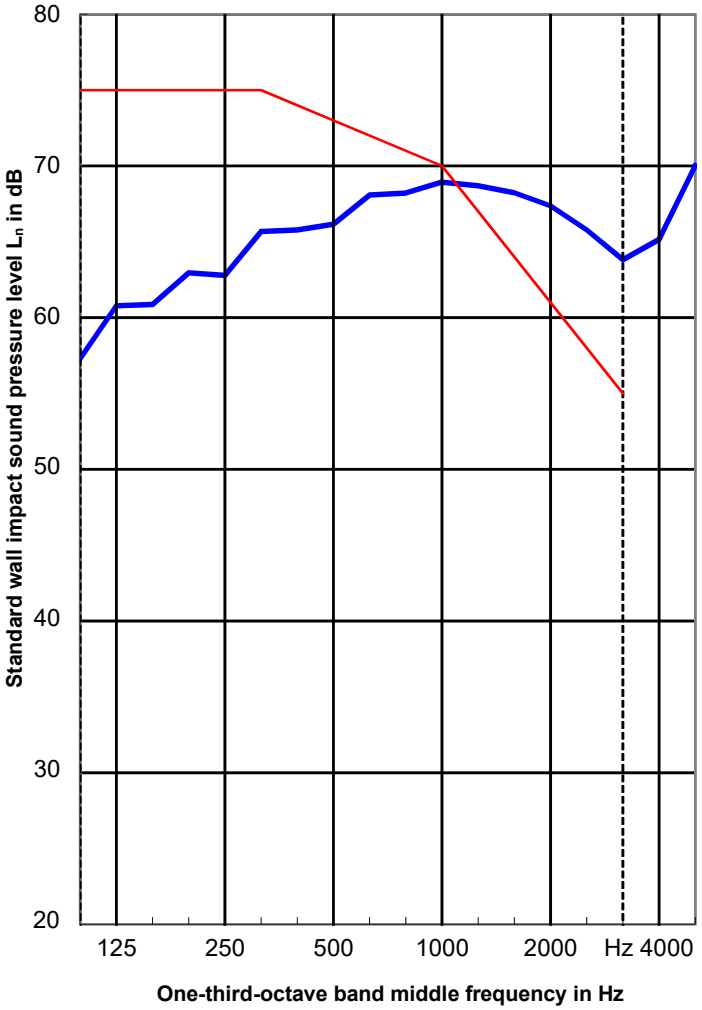
$L_{n0,w,wall}$ = 73 dB

$C_{I0,wall}$ = -10 dB

$L_{n0,w,wall}$ + $C_{I0,wall}$ = 63 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]
100	57.3
125	60.8
160	60.9
200	63.0
250	62.8
315	65.7
400	65.8
500	66.2
630	68.1
800	68.2
1000	68.9
1250	68.7
1600	68.2
2000	67.4
2500	65.8
3150	63.8
4000	65.1
5000	70.0

<: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.9 °C, relative humidity: 55%, air pressure: 958 hPa

$\Delta L_{W,flight}$ = 30 dB

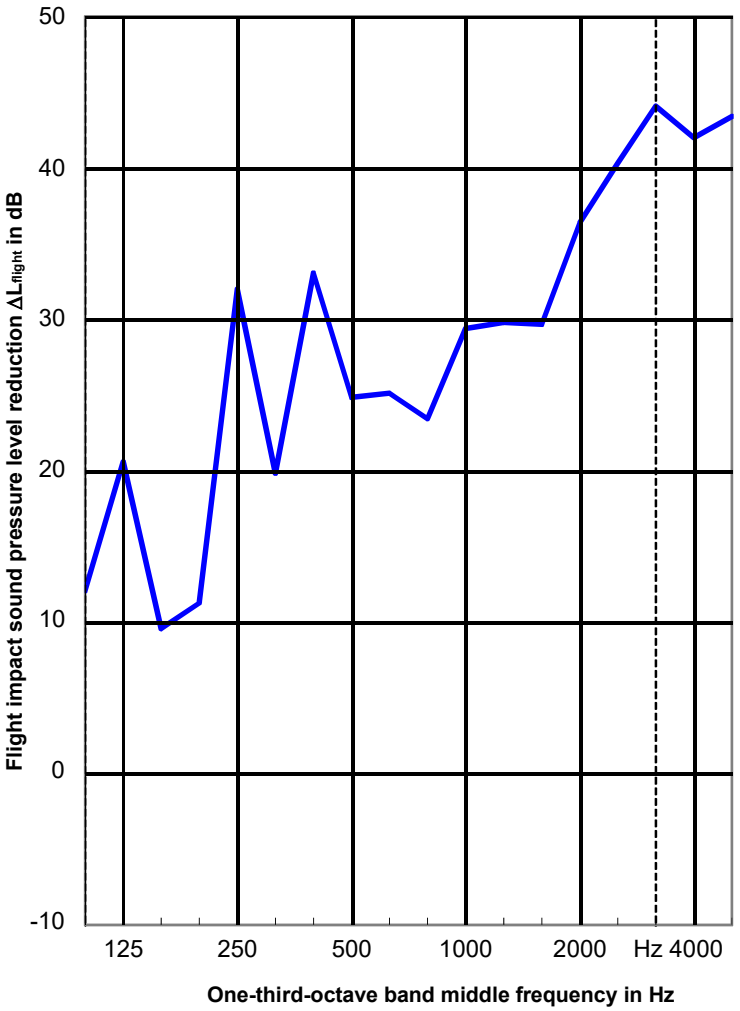
$C_{I,\Delta,flight}$ = -11 dB

$\Delta L_{lin,flight}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	46.8	12.1
125	51.7	20.6
160	52.8	9.6
200	60.3	11.2
250	62.5	31.9
315	59.0	19.8
400	62.0	33.0
500	61.3	24.8
630	62.3	25.1
800	62.0	23.4
1000	61.2	29.4
1250	62.9	29.8
1600	61.9	29.7
2000	62.1	36.3
2500	61.7	40.3
3150	61.6	44.1
4000	60.9	42.0
5000	59.6	43.4

>: Limitation by background noise or flanking path

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter



------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.9 °C, relative humidity: 55%, air pressure: 958 hPa

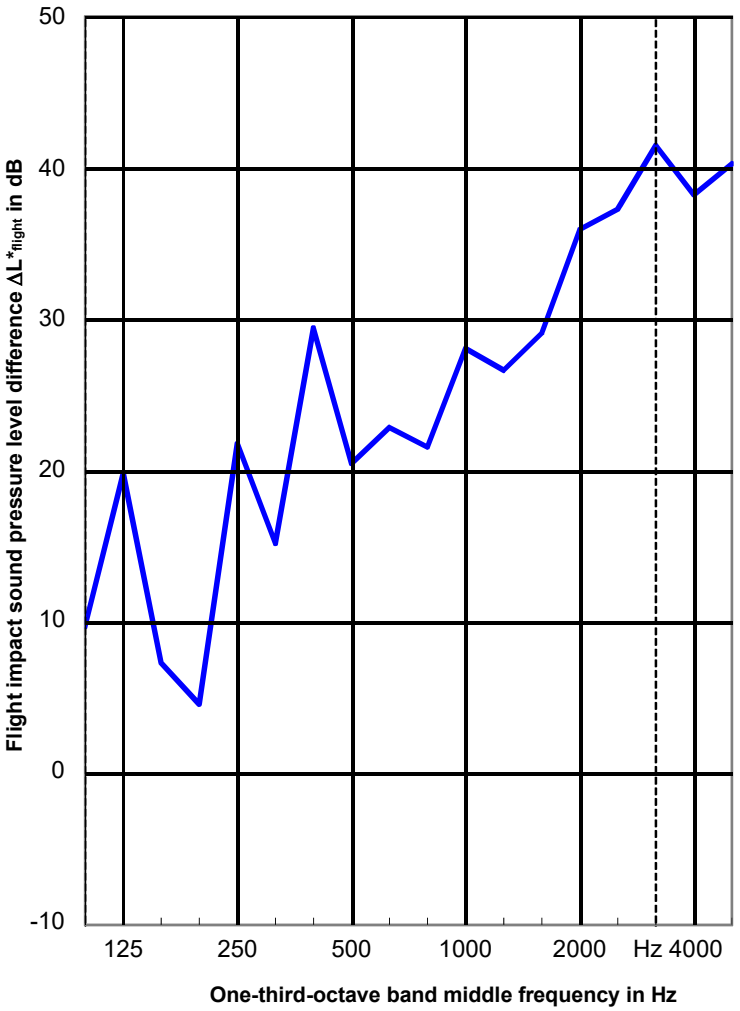
$\Delta L^*_{W,flight}$ = 27 dB

$C^*_{I,\Delta,flight}$ = -12 dB

$\Delta L^*_{lin,flight}$ = 15 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	44.4	9.7
125	50.9	19.8
160	50.5	7.3
200	53.7	4.6
250	52.3	21.8
315	54.4	15.2
400	58.4	29.4
500	57.0	20.5
630	60.0	22.9
800	60.1	21.6
1000	59.8	28.1
1250	59.7	26.6
1600	61.3	29.1
2000	61.7	35.9
2500	58.7	37.3
3150	59.0	41.5
4000	57.1	38.2
5000	56.5	40.3

>: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

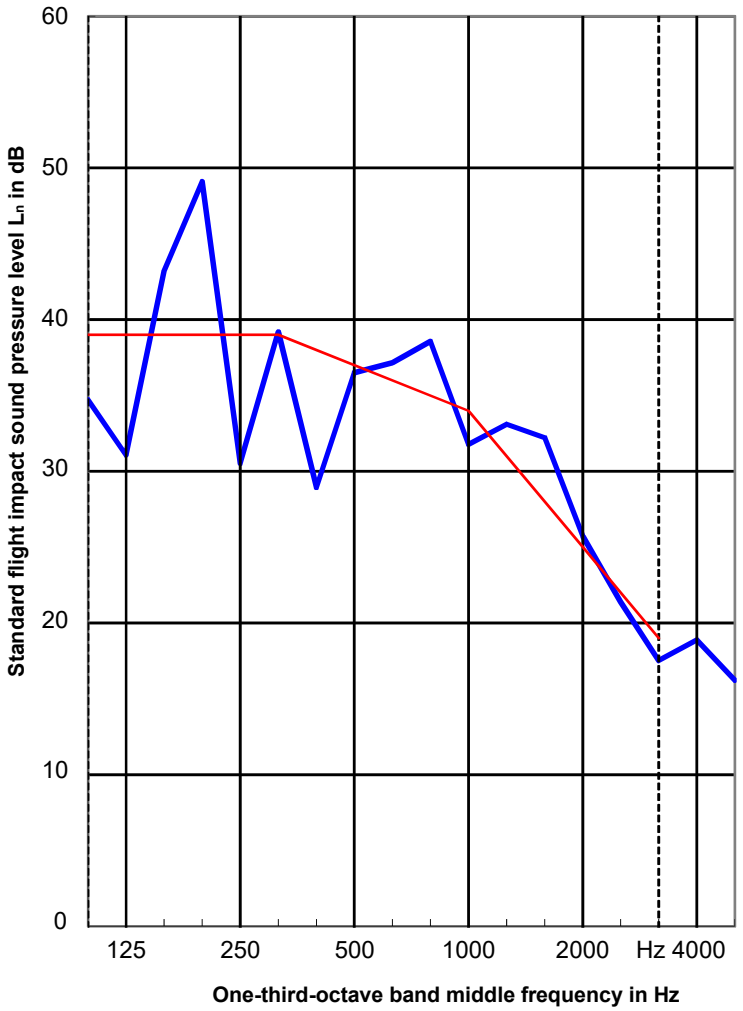
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.9 °C, relative humidity: 55%, air pressure: 958 hPa

$L_{n,w,flight}$ = 37 dB

$C_{I,flight}$ = -1 dB

$L_{n,w,flight} + C_{I,flight}$ = 36 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	34.7
125	31.1
160	43.2
200	49.1
250	30.5
315	39.2
400	29.0
500	36.5
630	37.1
800	38.6
1000	31.8
1250	33.1
1600	32.2
2000	25.7
2500	21.4
3150	17.5
4000	18.9
5000	16.2



<: Limitation by background noise or flanking path

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
4.4 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

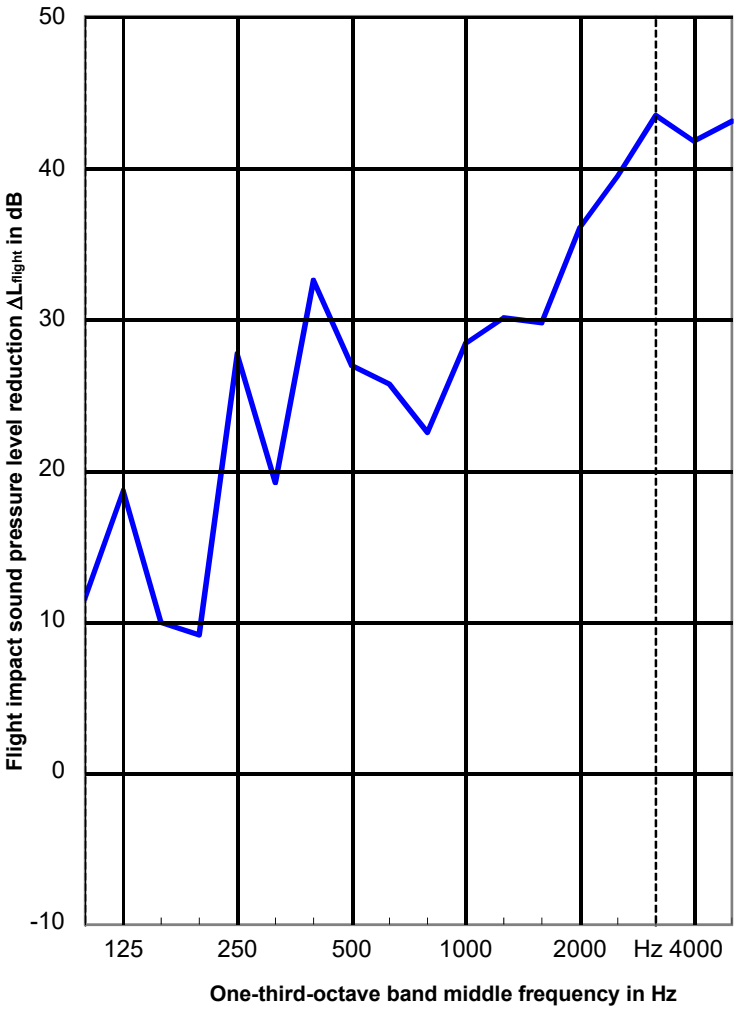
$\Delta L_{W,flight}$ = 30 dB

$C_{I,\Delta,flight}$ = -12 dB

$\Delta L_{lin,flight}$ = 18 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	46.8	11.6
125	51.7	18.7
160	52.8	10.0
200	60.3	9.1
250	62.5	27.7
315	59.0	19.2
400	62.0	32.5
500	61.3	26.9
630	62.3	25.7
800	62.0	22.5
1000	61.2	28.4
1250	62.9	30.1
1600	61.9	29.8
2000	62.1	36.0
2500	61.7	39.4
3150	61.6	43.4
4000	60.9	41.8
5000	59.6	43.0

>: Limitation by background noise or flanking path



------ Limit frequency range for evaluation according to ISO 717-2

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
4.4 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

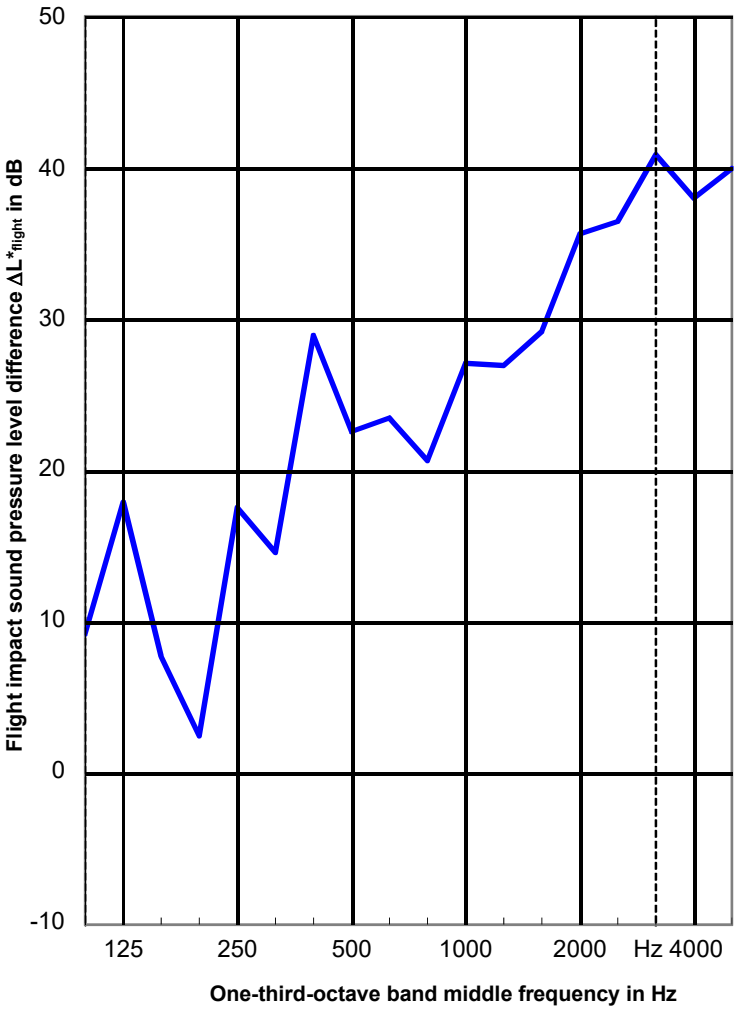
$\Delta L^*_{W,flight}$ = 27 dB

$C^*_{I,\Delta,flight}$ = -13 dB

$\Delta L^*_{lin,flight}$ = 14 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	9.2
125	50.9	17.9
160	50.5	7.7
200	53.7	2.5
250	52.3	17.5
315	54.4	14.6
400	58.4	28.9
500	57.0	22.6
630	60.0	23.5
800	60.1	20.7
1000	59.8	27.1
1250	59.7	26.9
1600	61.3	29.2
2000	61.7	35.6
2500	58.7	36.4
3150	59.0	40.9
4000	57.1	38.0
5000	56.5	39.9

>: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
4.4 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

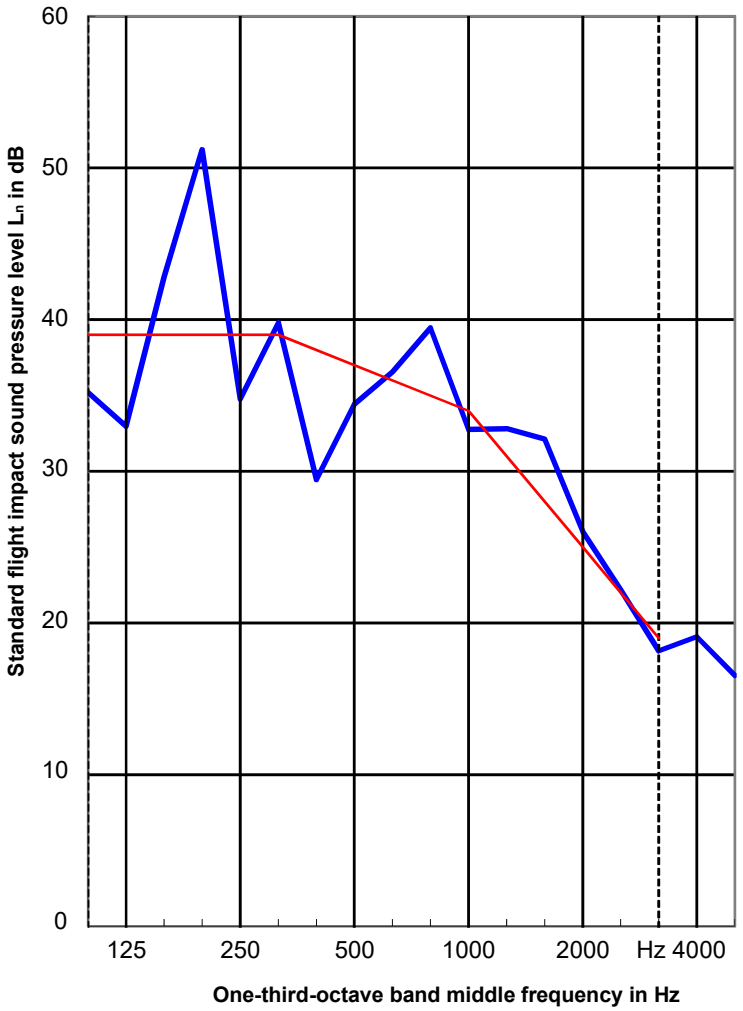
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

$L_{n,w,flight}$ = 37 dB

$C_{I,flight}$ = 1 dB

$L_{n,w,flight} + C_{I,flight}$ = 38 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	35.2
125	33.0
160	42.8
200	51.2
250	34.8
315	39.8
400	29.5
500	34.4
630	36.5
800	39.5
1000	32.8
1250	32.8
1600	32.1
2000	26.0
2500	22.2
3150	18.2
4000	19.1
5000	16.6



<: Limitation by background noise or flanking path

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
8.8 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

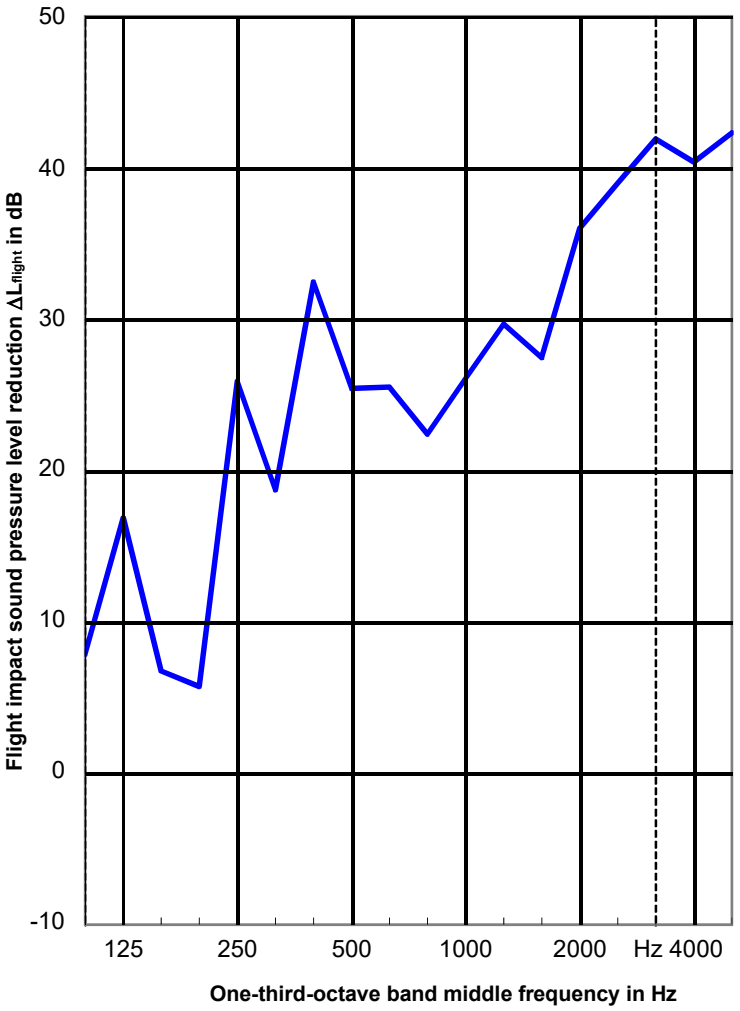
$\Delta L_{W,flight}$ = 28 dB

$C_{I,\Delta,flight}$ = -13 dB

$\Delta L_{lin,flight}$ = 15 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	46.8	7.9
125	51.7	16.9
160	52.8	6.8
200	60.3	5.7
250	62.5	25.9
315	59.0	18.7
400	62.0	32.4
500	61.3	25.4
630	62.3	25.5
800	62.0	22.4
1000	61.2	26.1
1250	62.9	29.7
1600	61.9	27.5
2000	62.1	36.0
2500	61.7	39.0
3150	61.6	41.9
4000	60.9	40.4
5000	59.6	42.3

>: Limitation by background noise or flanking path



Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010
Source Standard tapping machine
Receiving One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
8.8 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

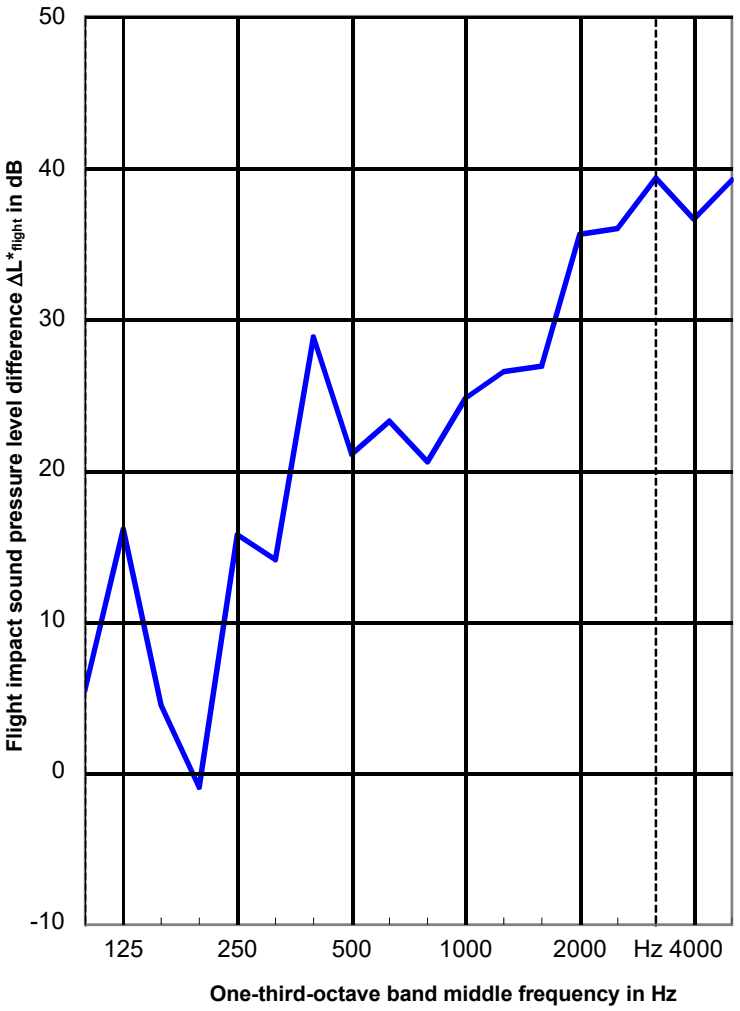
$\Delta L^*_{W,flight}$ = 25 dB

$C^*_{I,\Delta,flight}$ = -14 dB

$\Delta L^*_{lin,flight}$ = 11dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	5.5
125	50.9	16.1
160	50.5	4.5
200	53.7	-0.9
250	52.3	15.7
315	54.4	14.1
400	58.4	28.8
500	57.0	21.1
630	60.0	23.3
800	60.1	20.6
1000	59.8	24.8
1250	59.7	26.5
1600	61.3	26.9
2000	61.7	35.6
2500	58.7	36.0
3150	59.0	39.3
4000	57.1	36.6
5000	56.5	39.2

>: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
8.8 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

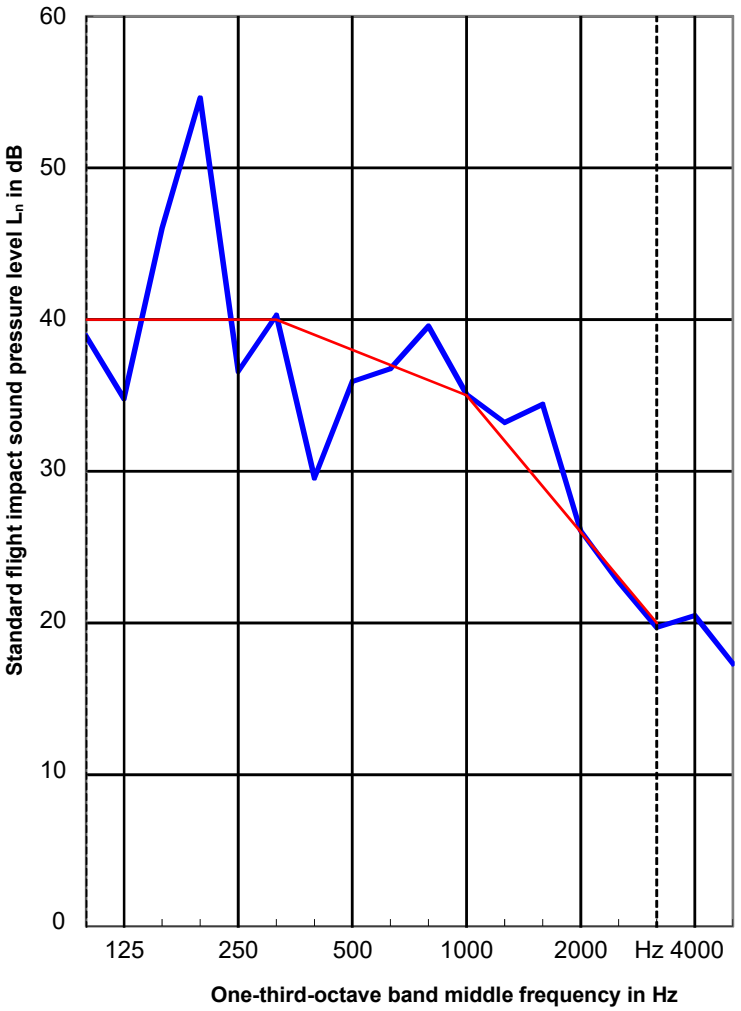
$L_{n,w,flight}$ = 38 dB

$C_{I,flight}$ = 3 dB

$L_{n,w,flight} + C_{I,flight}$ = 41 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	38.9
125	34.8
160	46.0
200	54.6
250	36.6
315	40.3
400	29.6
500	35.9
630	36.7
800	39.6
1000	35.1
1250	33.2
1600	34.4
2000	26.1
2500	22.7
3150	19.7
4000	20.5
5000	17.3

<: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
12.8 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

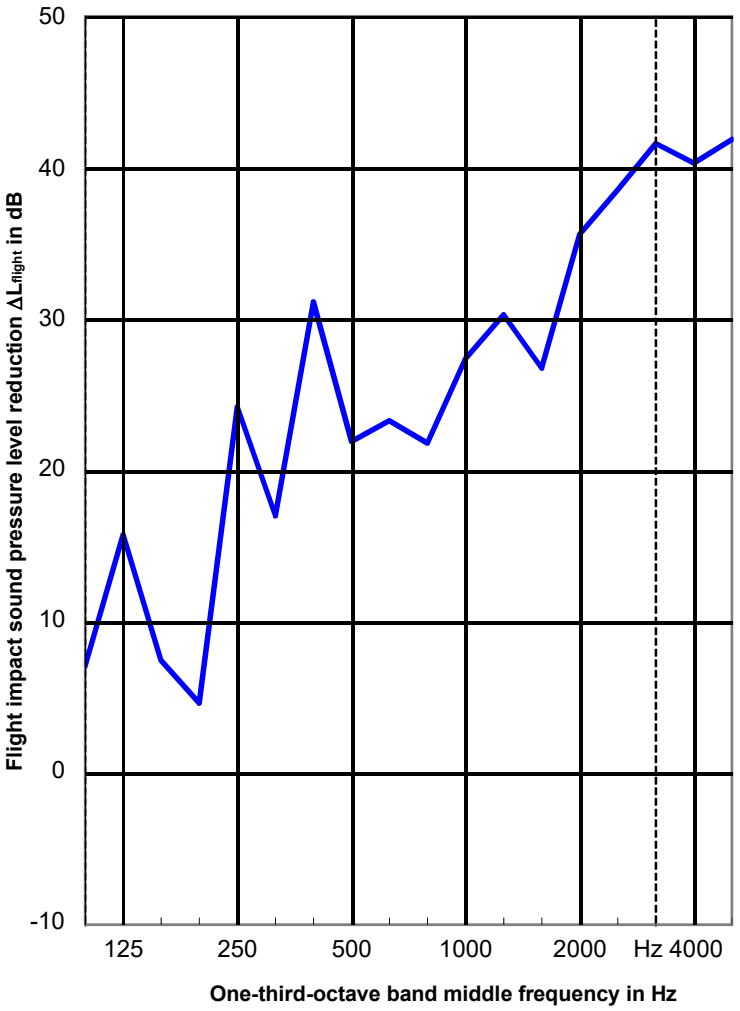
$\Delta L_{W,flight}$ = 27 dB

$C_{I,\Delta,flight}$ = -12 dB

$\Delta L_{lin,flight}$ = 15 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	46.8	7.1
125	51.7	15.8
160	52.8	7.5
200	60.3	4.6
250	62.5	24.2
315	59.0	17.0
400	62.0	31.1
500	61.3	21.9
630	62.3	23.3
800	62.0	21.8
1000	61.2	27.4
1250	62.9	30.3
1600	61.9	26.8
2000	62.1	35.6
2500	61.7	38.5
3150	61.6	< 41.6
4000	60.9	40.3
5000	59.6	41.9

>: Limitation by background noise or flanking path



------ Limit frequency range for evaluation according to ISO 717-2

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
12.8 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

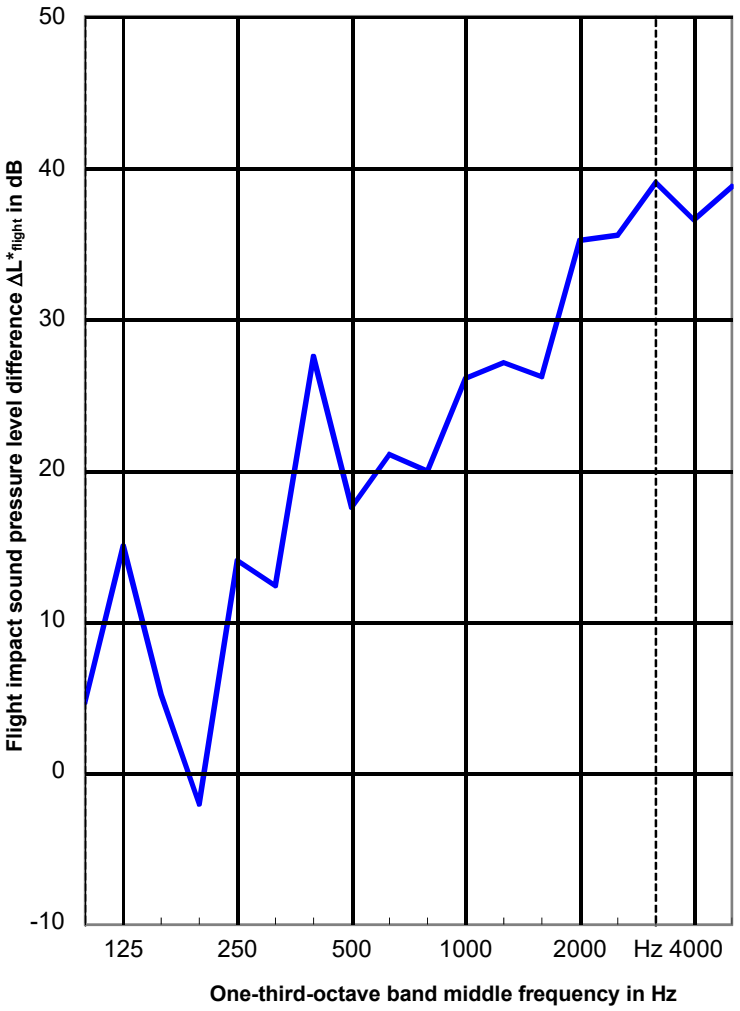
$\Delta L^*_{W,flight}$ = 24 dB

$C^*_{I,\Delta,flight}$ = -14 dB

$\Delta L^*_{lin,flight}$ = 10 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	4.7
125	50.9	15.0
160	50.5	5.2
200	53.7	-2.0
250	52.3	14.0
315	54.4	12.4
400	58.4	27.5
500	57.0	17.6
630	60.0	21.1
800	60.1	20.0
1000	59.8	26.1
1250	59.7	27.1
1600	61.3	26.2
2000	61.7	35.2
2500	58.7	35.5
3150	59.0	< 39.0
4000	57.1	36.5
5000	56.5	38.7

>: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 43 kN
12.8 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 43 kN load level (length 900 mm, width 26 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 20/08/2020**
Temperature: 22.8 °C, relative humidity: 55%, air pressure: 958 hPa

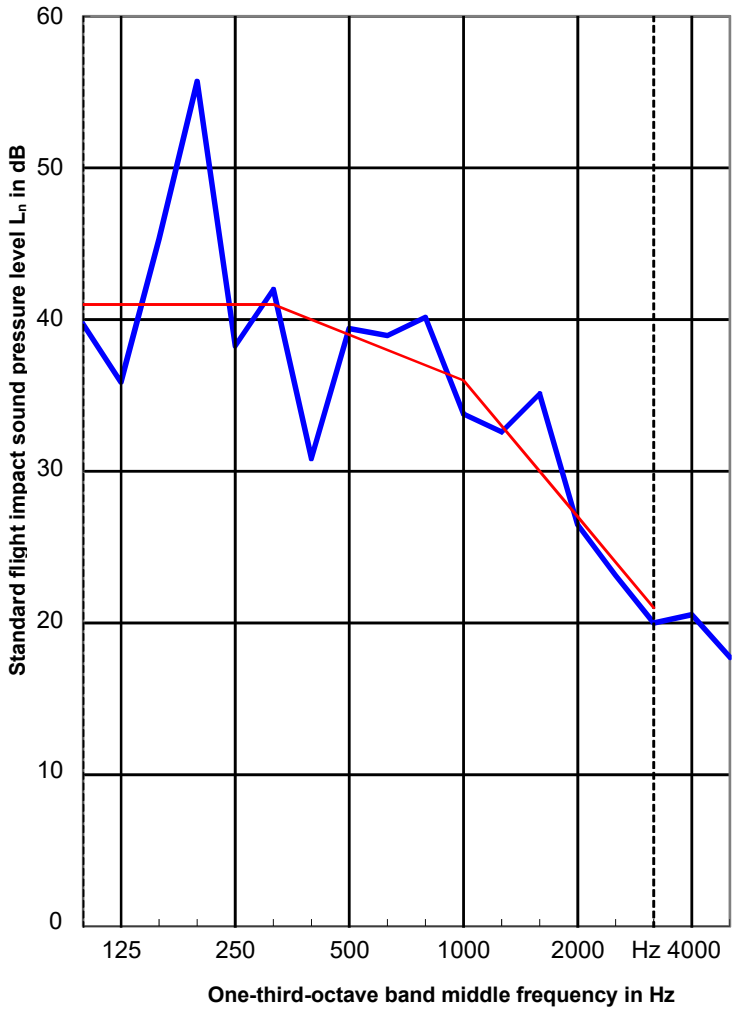
$L_{n,w,flight}$ = 39 dB

$C_{I,flight}$ = 3 dB

$L_{n,w,flight} + C_{I,flight}$ = 42 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	39.7
125	35.9
160	45.3
200	55.7
250	38.3
315	42.0
400	30.9
500	39.4
630	38.9
800	40.2
1000	33.8
1250	32.6
1600	35.1
2000	26.5
2500	23.1
3150	< 20.0
4000	20.5
5000	17.7

<: Limitation by background noise or flanking path



Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

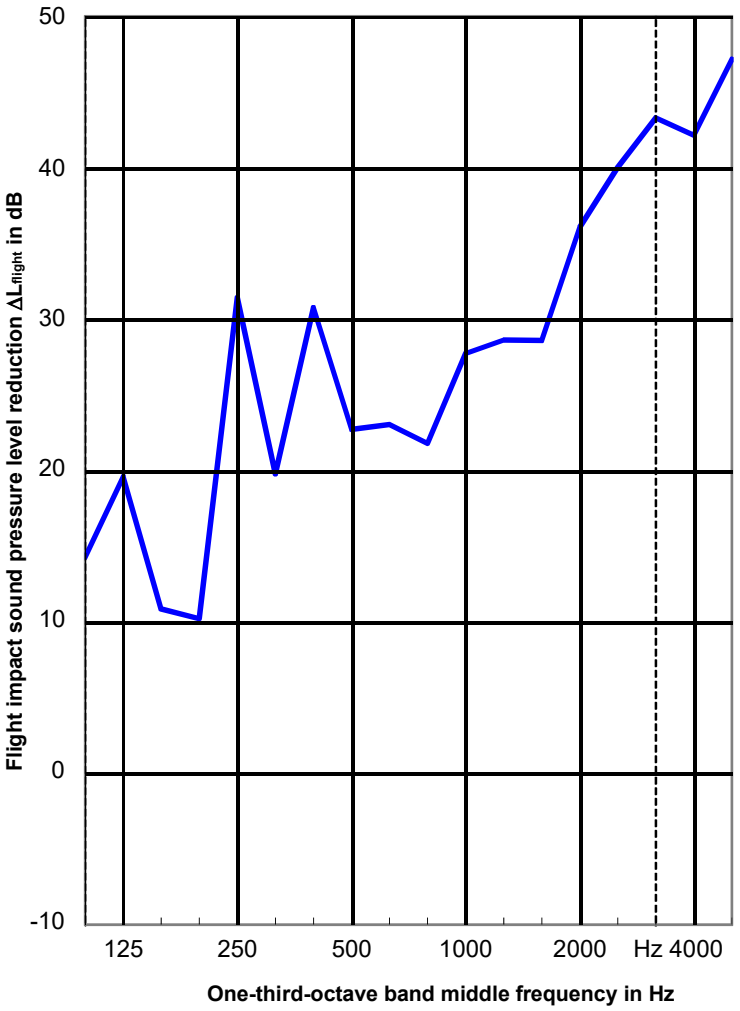
$\Delta L_{W,flight}$ = 30 dB

$C_{I,\Delta,flight}$ = -11 dB

$\Delta L_{lin,flight}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	46.8	14.3
125	51.7	19.6
160	52.8	10.9
200	60.3	10.2
250	62.5	31.4
315	59.0	19.8
400	62.0	30.8
500	61.3	22.7
630	62.3	23.0
800	62.0	21.8
1000	61.2	27.7
1250	62.9	28.6
1600	61.9	28.6
2000	62.1	36.1
2500	61.7	40.0
3150	61.6	43.3
4000	60.9	42.2
5000	59.6	47.2

>: Limitation by background noise or flanking path



Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010
Source Standard tapping machine
Receiving One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

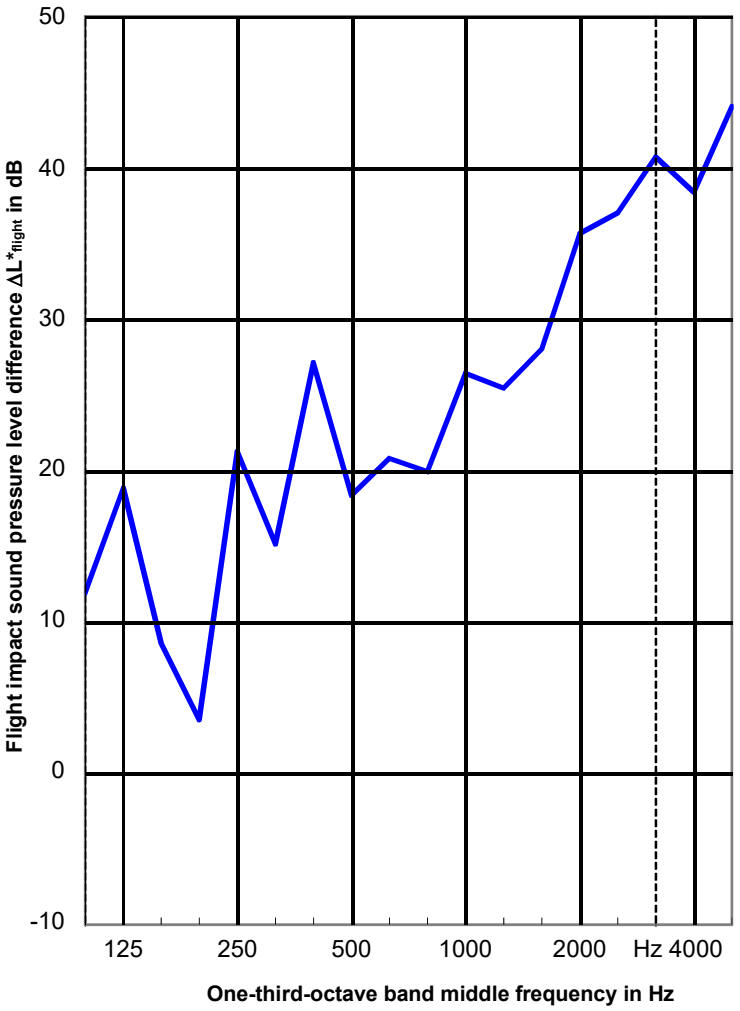
$\Delta L^*_{W,flight}$ = 27 dB

$C^*_{I,\Delta,flight}$ = -12 dB

$\Delta L^*_{lin,flight}$ = 15 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	11.9
125	50.9	18.8
160	50.5	8.6
200	53.7	3.5
250	52.3	21.3
315	54.4	15.1
400	58.4	27.1
500	57.0	18.4
630	60.0	20.8
800	60.1	19.9
1000	59.8	26.4
1250	59.7	25.5
1600	61.3	28.0
2000	61.7	35.7
2500	58.7	37.0
3150	59.0	40.7
4000	57.1	38.4
5000	56.5	44.0

>: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source	Standard tapping machine
Receiving	One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

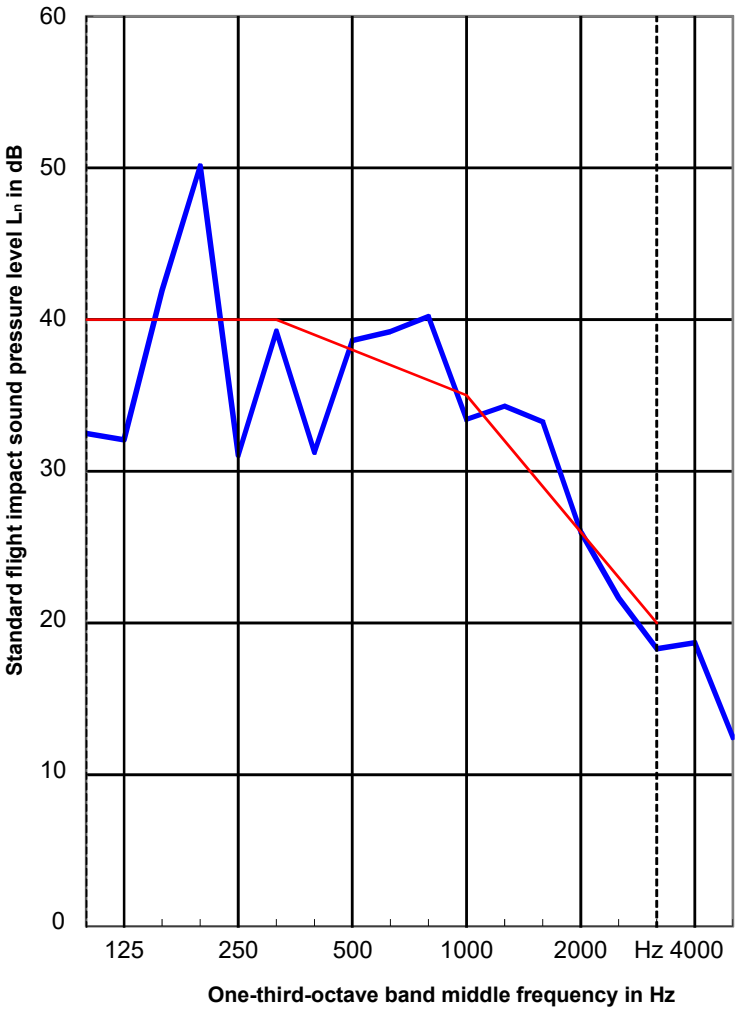
$L_{n,w,flight}$ = 38 dB

$C_{I,flight}$ = -1 dB

$L_{n,w,flight} + C_{I,flight}$ = 37 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	32.5
125	32.1
160	41.9
200	50.1
250	31.1
315	39.2
400	31.2
500	38.6
630	39.2
800	40.2
1000	33.4
1250	34.3
1600	33.3
2000	26.0
2500	21.6
3150	18.3
4000	18.7
5000	12.5

<: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
7 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

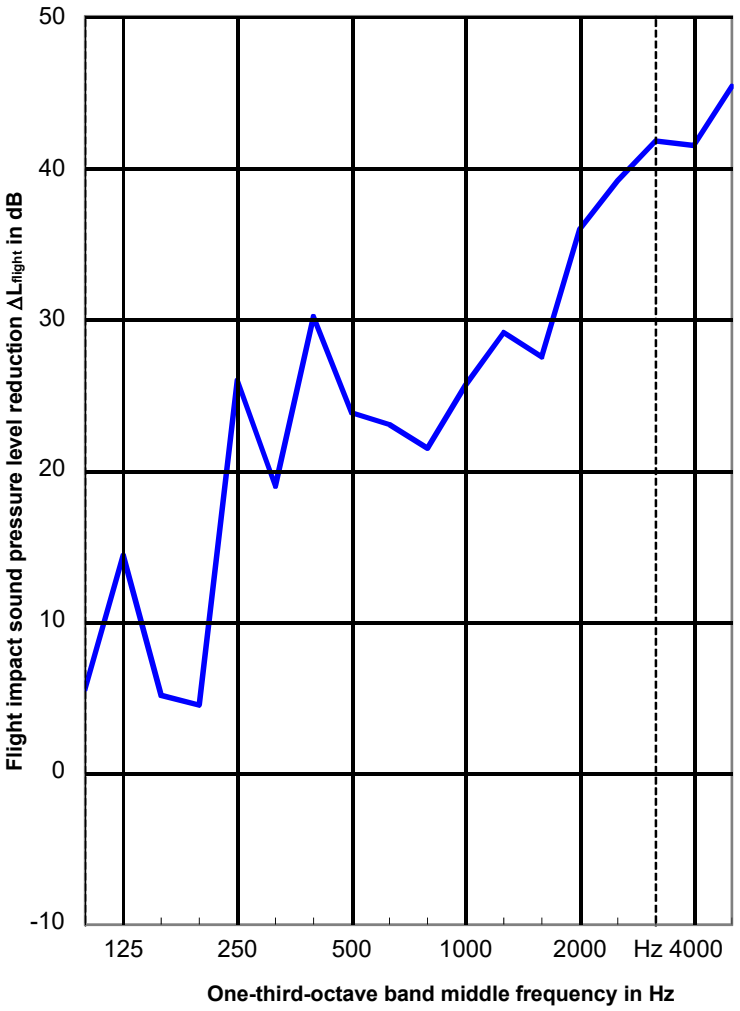
$\Delta L_{W,flight}$ = 26 dB

$C_{I,\Delta,flight}$ = -12 dB

$\Delta L_{lin,flight}$ = 14 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	46.8	5.6
125	51.7	14.4
160	52.8	5.2
200	60.3	4.5
250	62.5	25.9
315	59.0	19.0
400	62.0	30.2
500	61.3	23.8
630	62.3	23.0
800	62.0	21.5
1000	61.2	25.6
1250	62.9	29.1
1600	61.9	27.5
2000	62.1	35.9
2500	61.7	39.1
3150	61.6	41.8
4000	60.9	41.5
5000	59.6	45.4

>: Limitation by background noise or flanking path



------ Limit frequency range for evaluation according to ISO 717-2

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
7 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

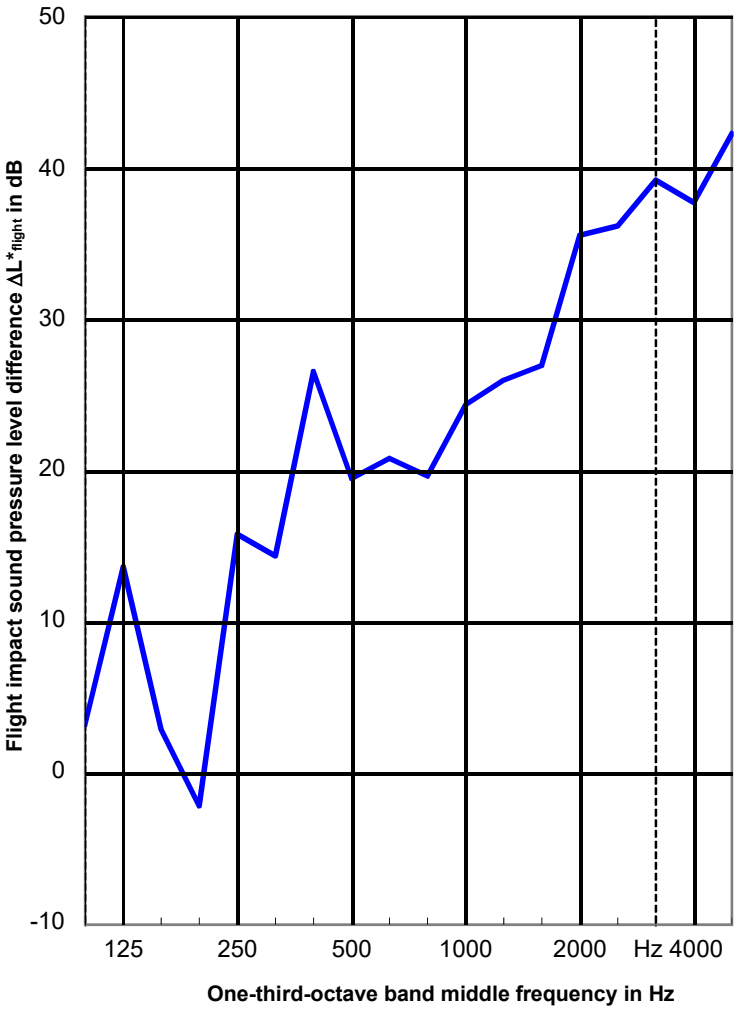
$\Delta L^*_{W,flight}$ = 24 dB

$C^*_{I,\Delta,flight}$ = -15 dB

$\Delta L^*_{lin,flight}$ = 9 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	3.2
125	50.9	13.6
160	50.5	2.9
200	53.7	-2.2
250	52.3	15.8
315	54.4	14.3
400	58.4	26.5
500	57.0	19.5
630	60.0	20.8
800	60.1	19.6
1000	59.8	24.3
1250	59.7	26.0
1600	61.3	26.9
2000	61.7	35.5
2500	58.7	36.1
3150	59.0	39.2
4000	57.1	37.7
5000	56.5	42.2

>: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
7 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

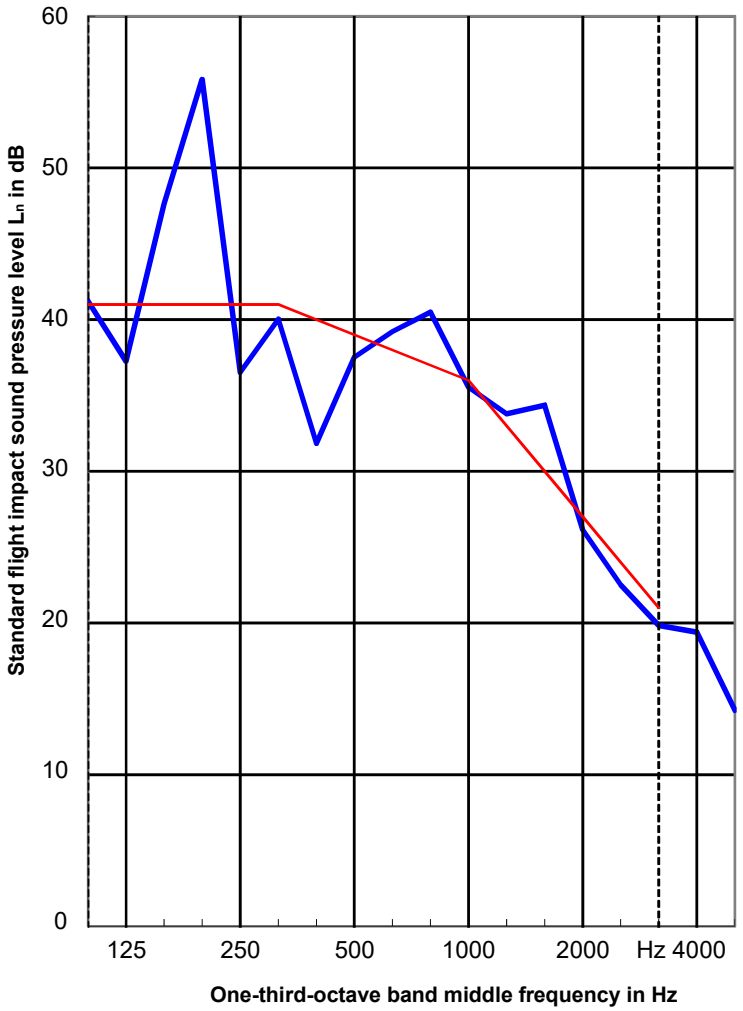
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

$L_{n,w,flight}$ = 39 dB

$C_{I,flight}$ = 3 dB

$L_{n,w,flight} + C_{I,flight}$ = 42 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	41.2
125	37.3
160	47.6
200	55.8
250	36.5
315	40.0
400	31.8
500	37.5
630	39.2
800	40.5
1000	35.5
1250	33.8
1600	34.4
2000	26.1
2500	22.5
3150	19.8
4000	19.4
5000	14.2



<: Limitation by background noise or flanking path

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
15 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

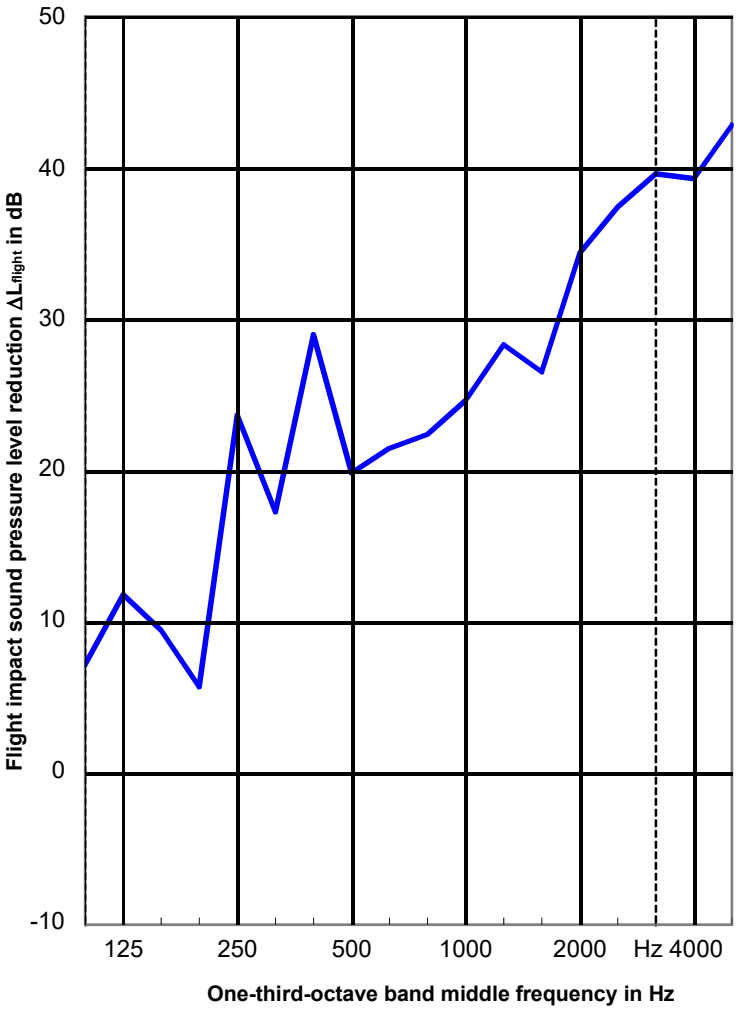
$\Delta L_{W,flight}$ = 27 dB

$C_{I,\Delta,flight}$ = -12 dB

$\Delta L_{lin,flight}$ = 15 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	46.8	7.2
125	51.7	11.8
160	52.8	9.5
200	60.3	5.7
250	62.5	23.6
315	59.0	17.3
400	62.0	29.0
500	61.3	19.8
630	62.3	21.4
800	62.0	22.4
1000	61.2	24.6
1250	62.9	28.3
1600	61.9	26.5
2000	62.1	34.4
2500	61.7	37.4
3150	61.6	39.6
4000	60.9	39.3
5000	59.6	42.8

>: Limitation by background noise or flanking path



Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010
Source Standard tapping machine
Receiving One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
15 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-related mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

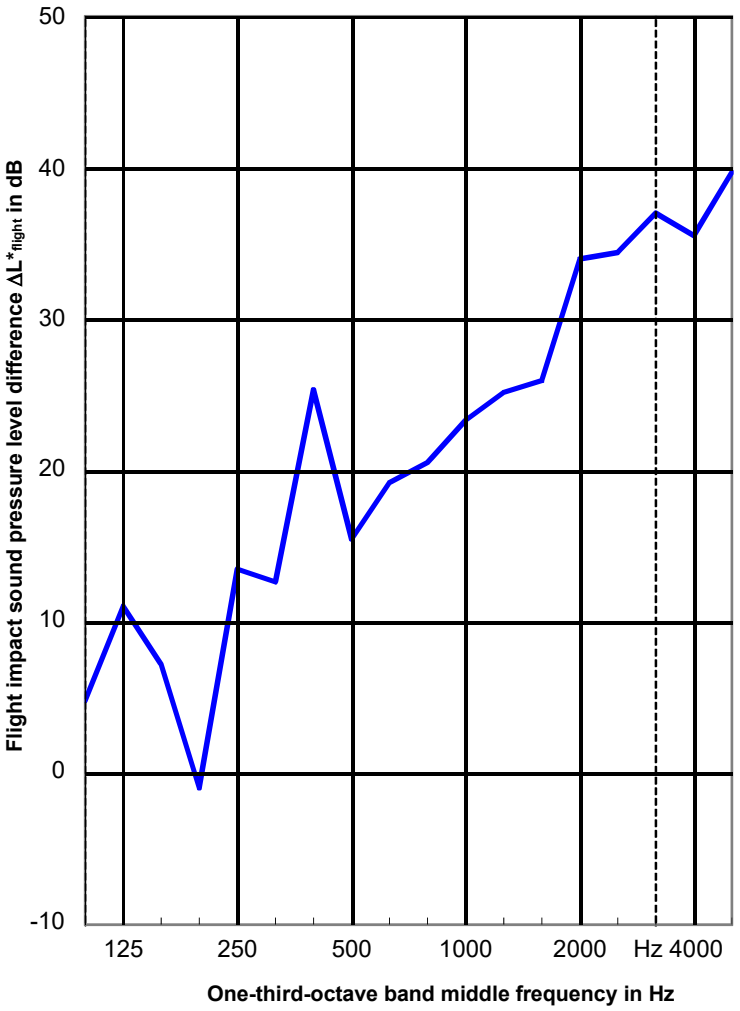
$\Delta L^*_{W,flight}$ = 24 dB

$C^*_{I,\Delta,flight}$ = -13 dB

$\Delta L^*_{lin,flight}$ = 11 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	4.8
125	50.9	11.0
160	50.5	7.2
200	53.7	-1.0
250	52.3	13.5
315	54.4	12.6
400	58.4	25.3
500	57.0	15.5
630	60.0	19.2
800	60.1	20.5
1000	59.8	23.3
1250	59.7	25.2
1600	61.3	25.9
2000	61.7	34.0
2500	58.7	34.4
3150	59.0	37.0
4000	57.1	35.5
5000	56.5	39.7

>: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source	Standard tapping machine
Receiving	One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
15 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

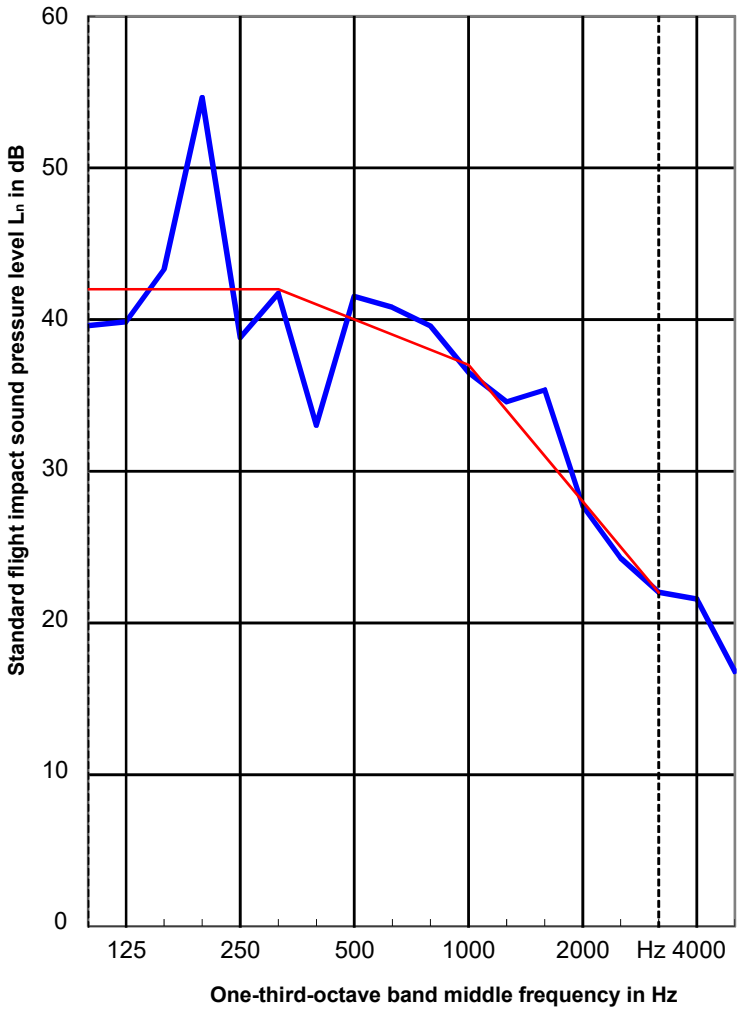
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

$L_{n,w,flight}$ = 40 dB

$C_{I,flight}$ = 1 dB

$L_{n,w,flight} + C_{I,flight}$ = 41 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	39.6
125	39.9
160	43.3
200	54.6
250	38.8
315	41.7
400	33.0
500	41.5
630	40.8
800	39.6
1000	36.5
1250	34.6
1600	35.4
2000	27.7
2500	24.3
3150	22.0
4000	21.6
5000	16.8



<: Limitation by background noise or flanking path

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010
Source Standard tapping machine
Receiving One-third-octave band filter

Shifted reference curve
Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
22 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

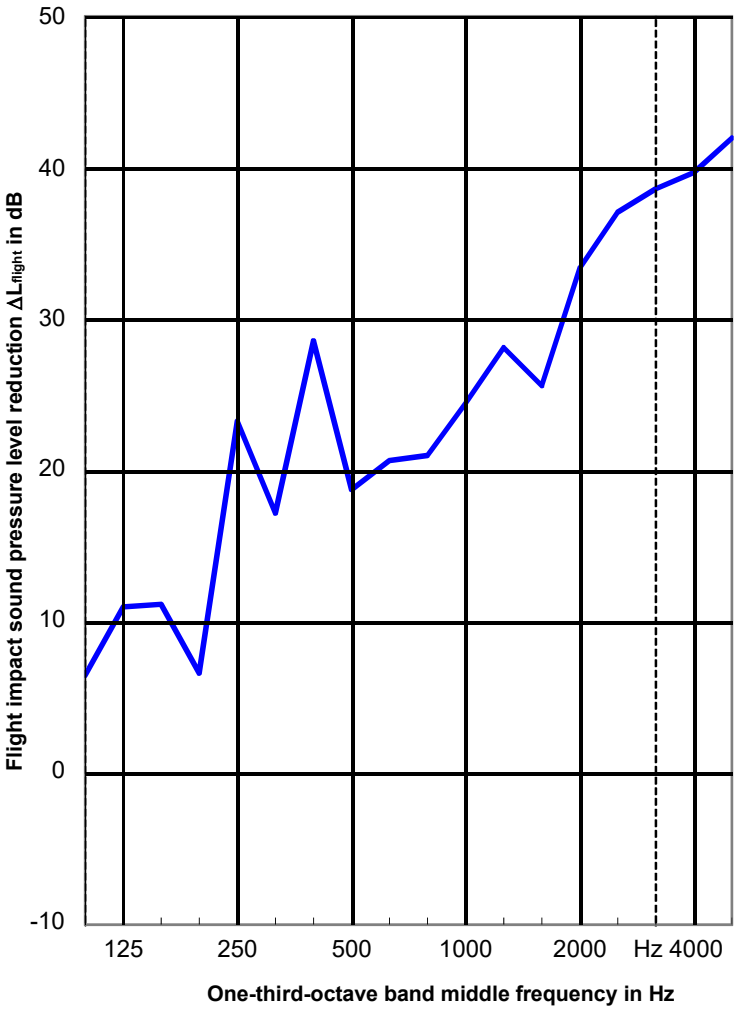
$\Delta L_{W,flight}$ = 27 dB

$C_{I,\Delta,flight}$ = -11 dB

$\Delta L_{lin,flight}$ = 16 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	46.8	6.5
125	51.7	11.0
160	52.8	11.2
200	60.3	6.6
250	62.5	23.2
315	59.0	17.2
400	62.0	28.6
500	61.3	18.7
630	62.3	20.6
800	62.0	21.0
1000	61.2	24.4
1250	62.9	28.1
1600	61.9	25.6
2000	62.1	33.4
2500	61.7	37.1
3150	61.6	38.6
4000	60.9	39.7
5000	59.6	41.9

>: Limitation by background noise or flanking path



Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010
Source Standard tapping machine
Receiving One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
22 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

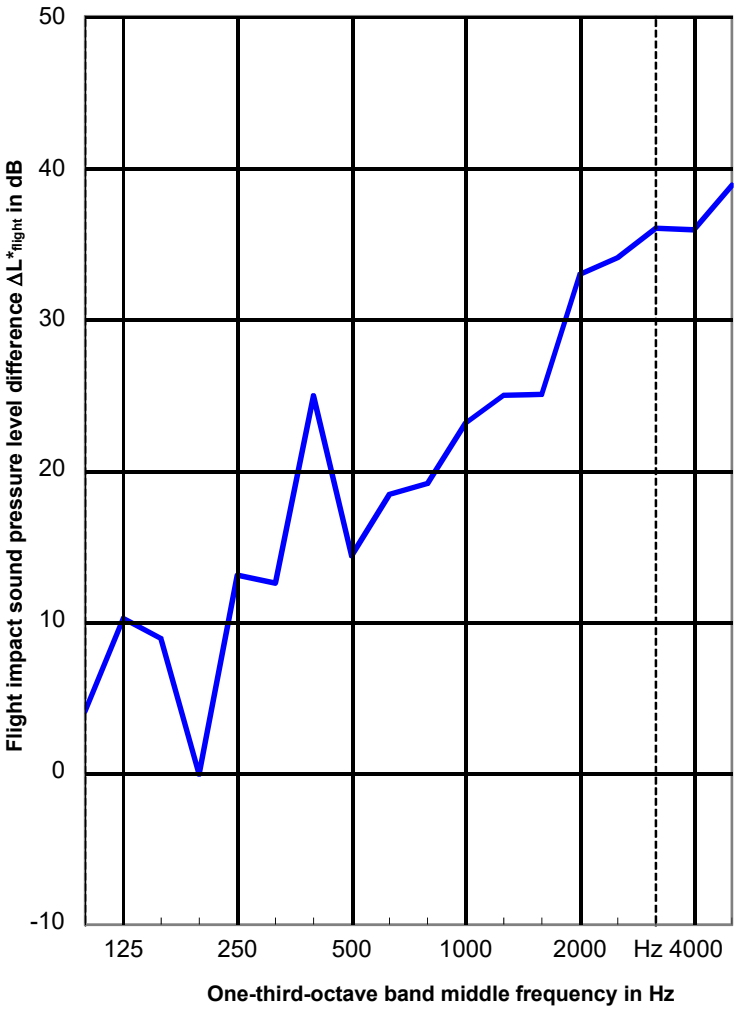
$\Delta L^*_{W,flight}$ = 24 dB

$C^*_{I,\Delta,flight}$ = -13 dB

$\Delta L^*_{lin,flight}$ = 11 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	4.1
125	50.9	10.2
160	50.5	8.9
200	53.7	-0.1
250	52.3	13.1
315	54.4	12.5
400	58.4	24.9
500	57.0	14.4
630	60.0	18.4
800	60.1	19.1
1000	59.8	23.1
1250	59.7	25.0
1600	61.3	25.0
2000	61.7	33.0
2500	58.7	34.0
3150	59.0	36.0
4000	57.1	35.9
5000	56.5	38.8

>: Limitation by background noise or flanking path



Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source	Standard tapping machine
Receiving	One-third-octave band filter

------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcoscal SP - Elastomer bearing 15 mm for load level 61 kN
22 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version for 61 kN load level (length 900 mm, width 31 mm)

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 25/08/2020**
Temperature: 22.6 °C, relative humidity: 55%, air pressure: 960 hPa

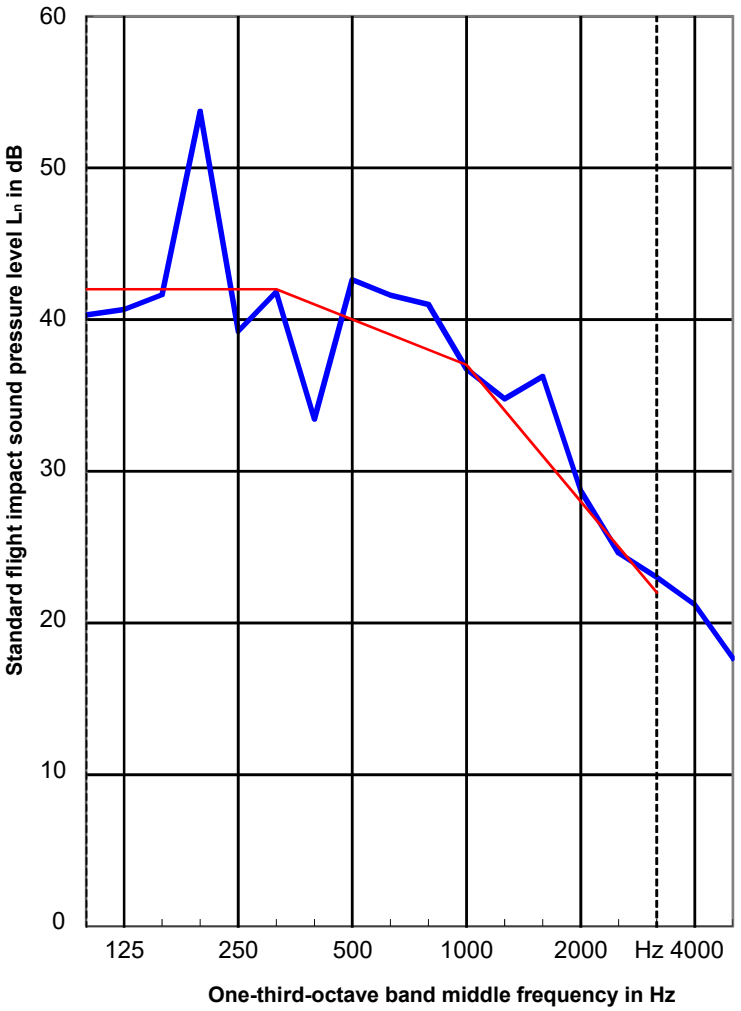
$L_{n,w,flight}$ = 40 dB

$C_{I,flight}$ = 1 dB

$L_{n,w,flight} + C_{I,flight}$ = 41 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	40.3
125	40.7
160	41.6
200	53.7
250	39.2
315	41.8
400	33.4
500	42.6
630	41.6
800	41.0
1000	36.7
1250	34.8
1600	36.3
2000	28.7
2500	24.6
3150	23.0
4000	21.2
5000	17.7

<: Limitation by background noise or flanking path



Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010
Source machine	Standard tapping
Receiving	One-third-octave band filter

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Stair landing

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Stair flight did not rest on stair landing

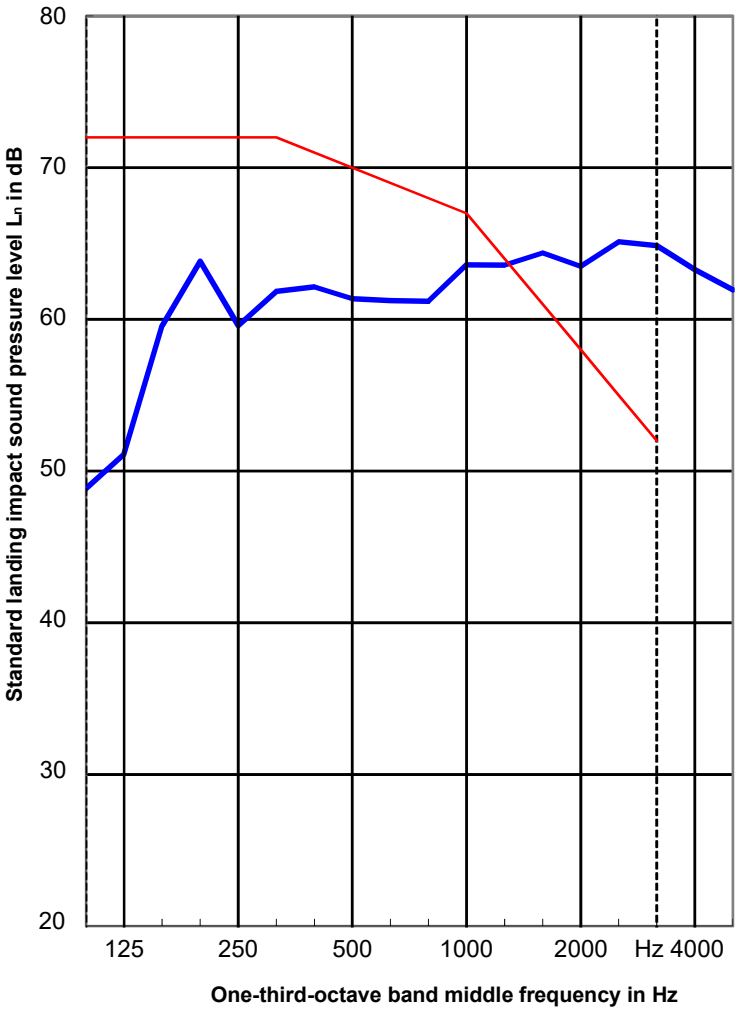
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 29/10/2020**
Temperature: 20.8 °C, relative humidity: 58%, air pressure: 970 hPa

$L_{n0,w,landing}$ = 70 dB

$C_{I0,landing}$ = -11 dB

$L_{n0,w,landing} + C_{I0,landing}$ = 59 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]
100	48.8
125	51.1
160	59.6
200	63.8
250	59.6
315	61.8
400	62.1
500	61.3
630	61.2
800	61.2
1000	63.6
1250	63.6
1600	64.4
2000	63.5
2500	65.1
3150	64.9
4000	63.3
5000	61.9



<: Limitation by background noise or flanking path

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter

Shifted reference curve
Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

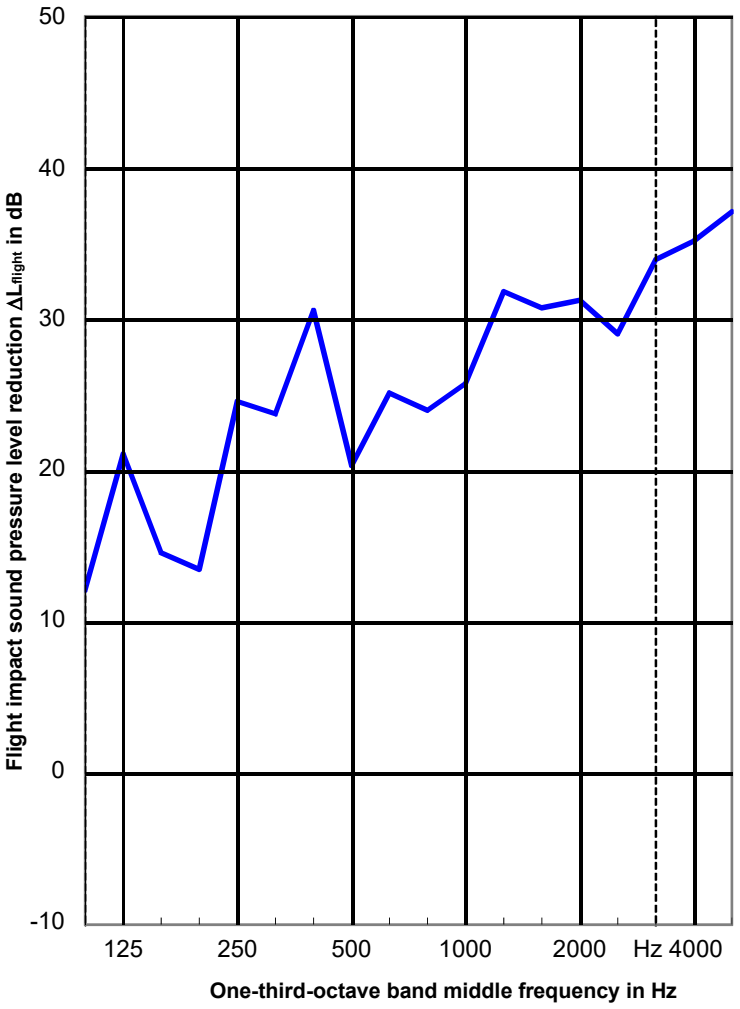
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L_{W,flight}$ = 28 dB

$C_{I,\Delta,flight}$ = -7 dB

$\Delta L_{lin,flight}$ = 21 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	48.8	12.1
125	51.1	21.1
160	59.6	14.6
200	63.8	13.5
250	59.6	24.6
315	61.8	23.7
400	62.1	30.6
500	61.3	20.3
630	61.2	25.1
800	61.2	24.0
1000	63.6	25.7
1250	63.6	31.8
1600	64.4	30.7
2000	63.5	31.2
2500	65.1	29.0
3150	64.9	33.9
4000	63.3	35.2
5000	61.9	37.1



<: Limitation by background noise

1) : Airborne sound flanking path correction

2) : Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

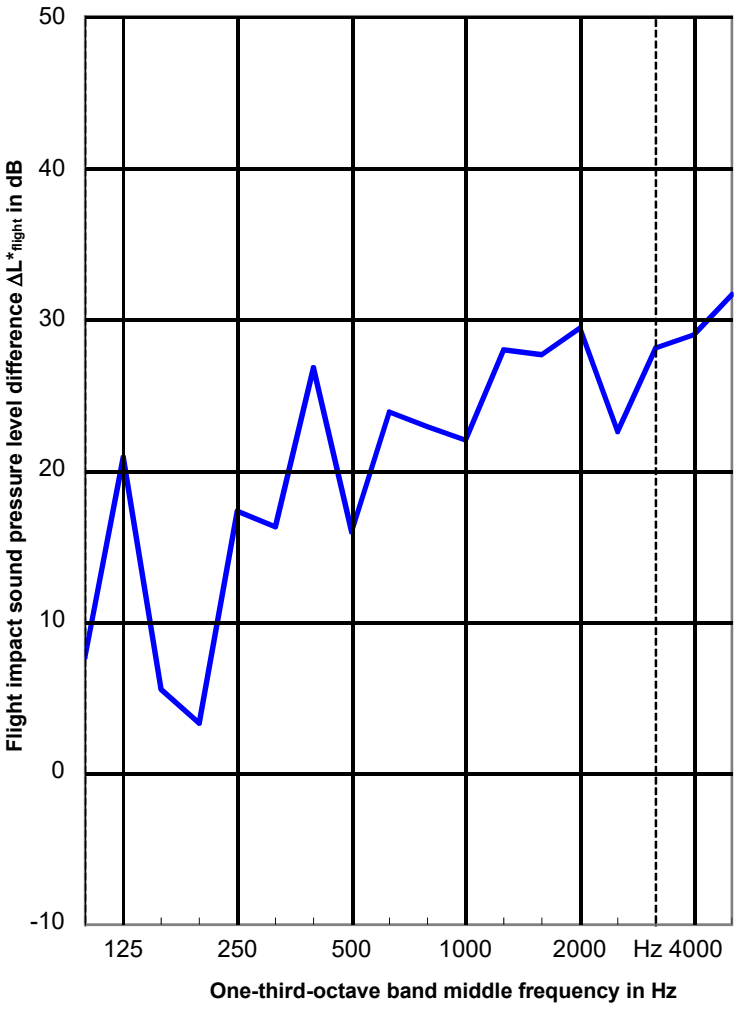
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L^*_{W,flight}$ = 22 dB

$C^*_{I,\Delta,flight}$ = -8 dB

$\Delta L^*_{lin,flight}$ = 14 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	7.7
125	50.9	20.9
160	50.5	5.5
200	53.7	3.3
250	52.3	17.3
315	54.4	16.3
400	58.4	26.8
500	57.0	16.0
630	60.0	23.9
800	60.1	22.9
1000	59.8	22.0
1250	59.7	28.0
1600	61.3	27.6
2000	61.7	29.4
2500	58.7	22.6
3150	59.0	28.1
4000	57.1	29.0
5000	56.5	31.6



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
0 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

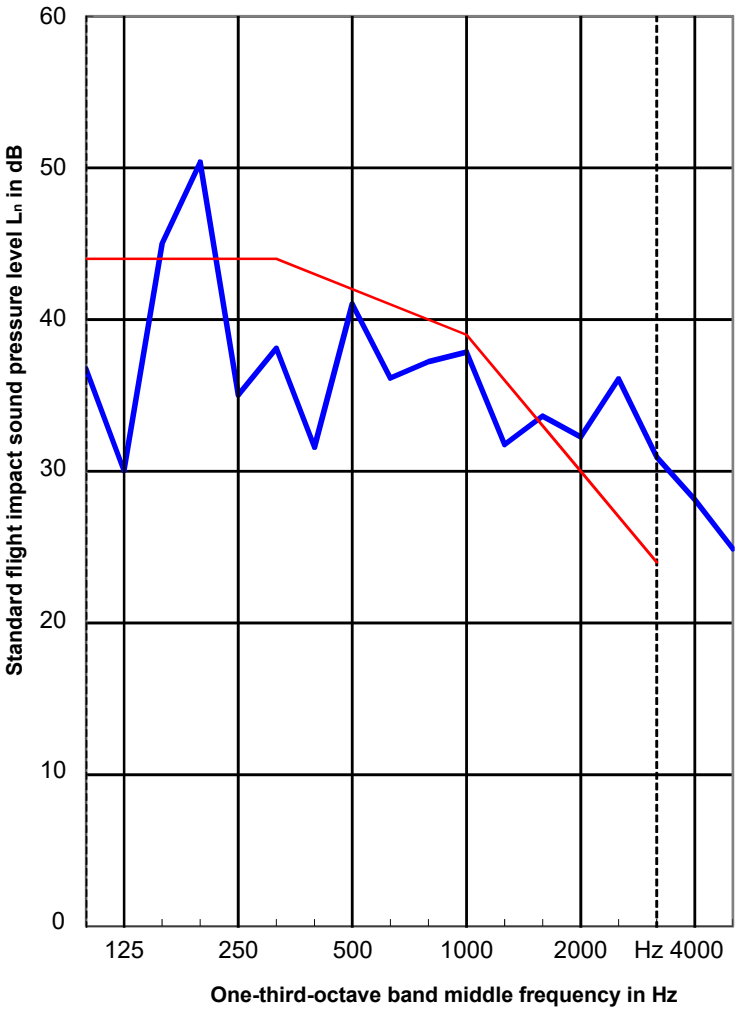
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$L_{n,w,flight}$ = 42 dB

$C_{I,flight}$ = -4 dB

$L_{n,w,flight} + C_{I,flight}$ = 38 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	36.7
125	30.0
160	45.0
200	50.4
250	35.0
315	38.1
400	31.6
500	41.0
630	36.1
800	37.2
1000	37.9
1250	31.8
1600	33.6
2000	32.3
2500	36.1
3150	30.9
4000	28.1
5000	24.9



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
5.9 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

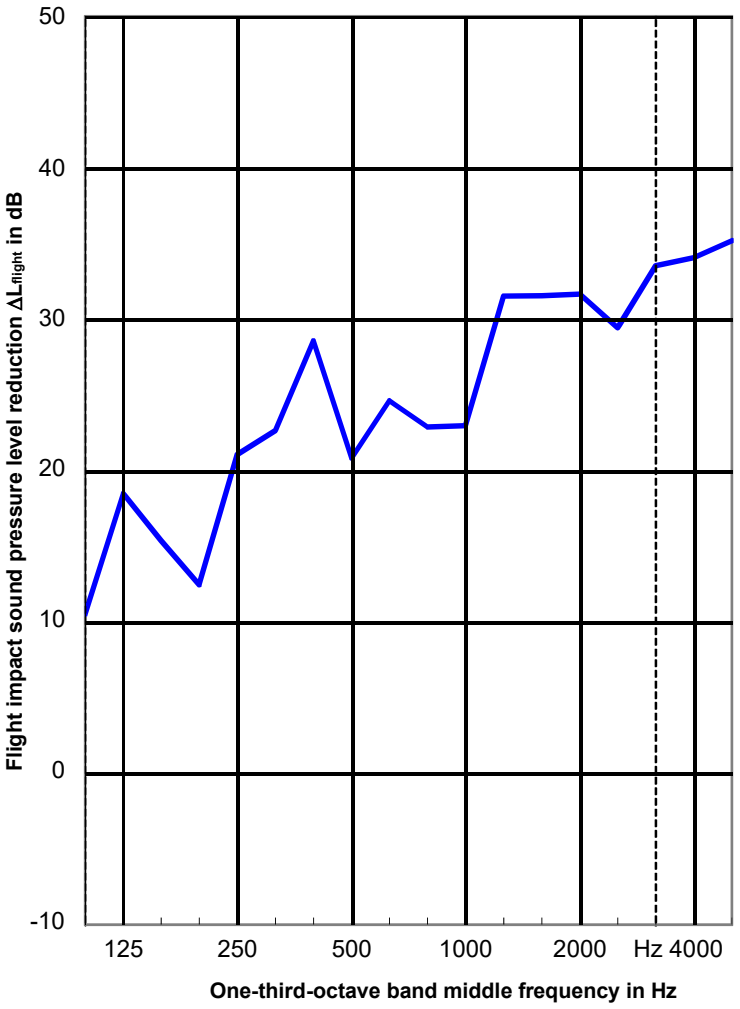
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L_{W,flight}$ = 28 dB

$C_{I,\Delta,flight}$ = -8 dB

$\Delta L_{lin,flight}$ = 20 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	48.8	10.5
125	51.1	18.5
160	59.6	15.4
200	63.8	12.5
250	59.6	21.1
315	61.8	22.6
400	62.1	28.6
500	61.3	20.8
630	61.2	24.6
800	61.2	22.9
1000	63.6	22.9
1250	63.6	31.5
1600	64.4	31.5
2000	63.5	31.6
2500	65.1	29.4
3150	64.9	33.5
4000	63.3	34.1
5000	61.9	35.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
5.9 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

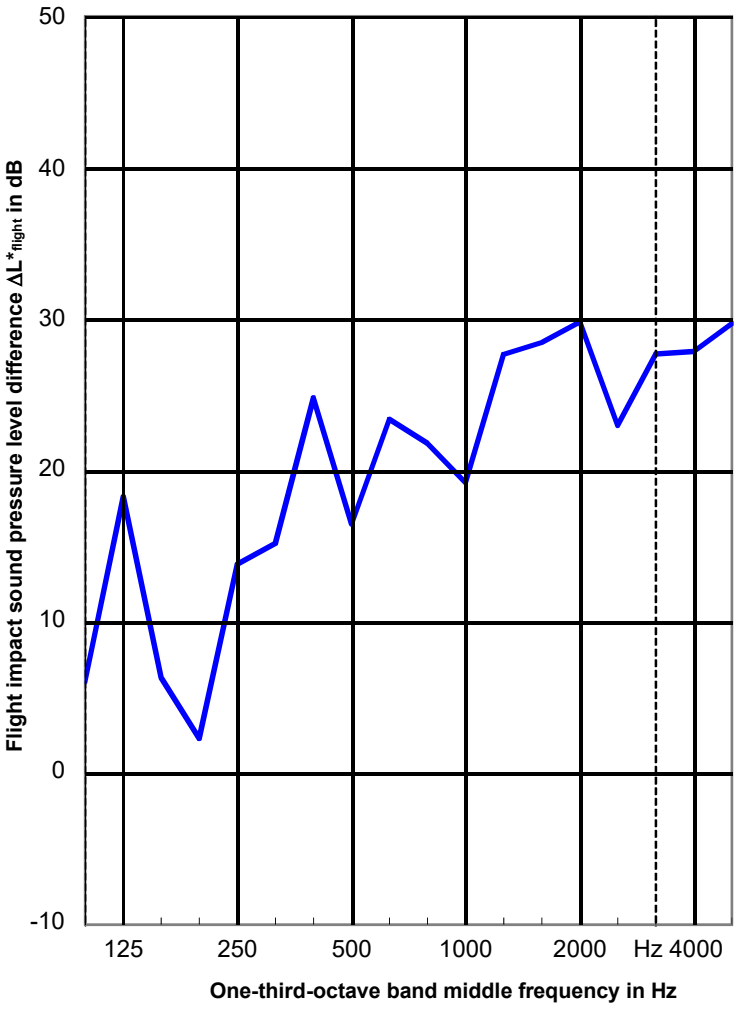
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L^*_{W,flight}$ = 22 dB

$C^*_{I,\Delta,flight}$ = -9 dB

$\Delta L^*_{lin,flight}$ = 13 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	6.1
125	50.9	18.3
160	50.5	6.3
200	53.7	2.3
250	52.3	13.8
315	54.4	15.2
400	58.4	24.8
500	57.0	16.5
630	60.0	23.4
800	60.1	21.8
1000	59.8	19.2
1250	59.7	27.7
1600	61.3	28.4
2000	61.7	29.8
2500	58.7	23.0
3150	59.0	27.7
4000	57.1	27.9
5000	56.5	29.7



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
5.9 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

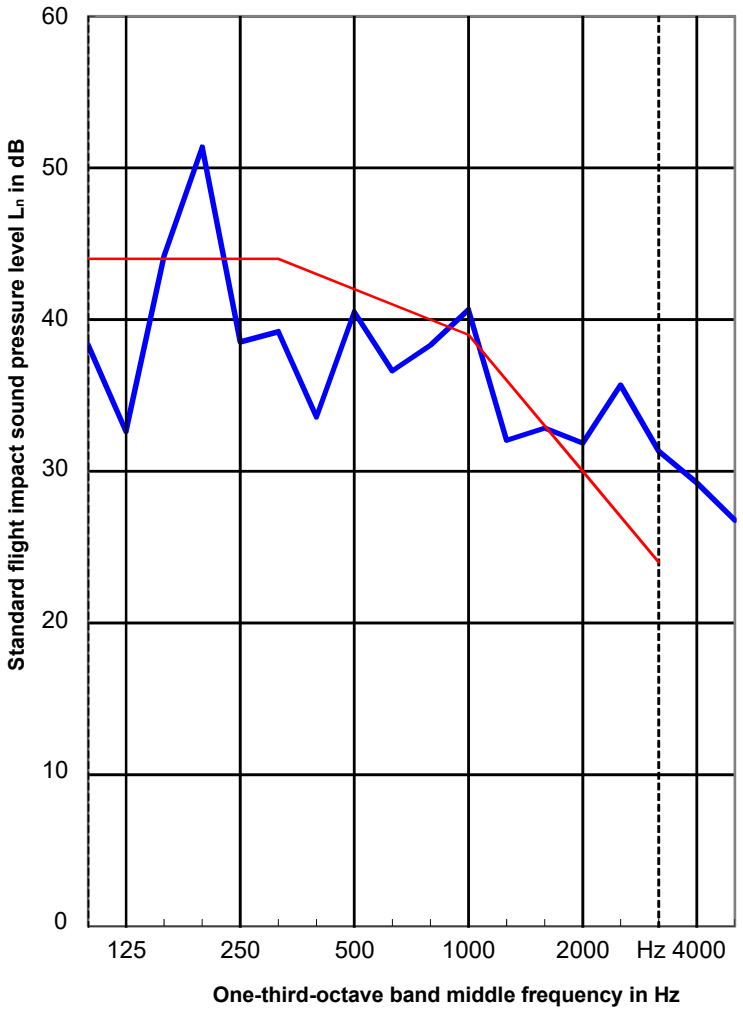
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$L_{n,w,flight}$ = 42 dB

$C_{I,flight}$ = -3 dB

$L_{n,w,flight} + C_{I,flight}$ = 39 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	38.3
125	32.6
160	44.2
200	51.4
250	38.5
315	39.2
400	33.6
500	40.5
630	36.6
800	38.3
1000	40.7
1250	32.1
1600	32.8
2000	31.9
2500	35.7
3150	31.3
4000	29.2
5000	26.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
11.7 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-related mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

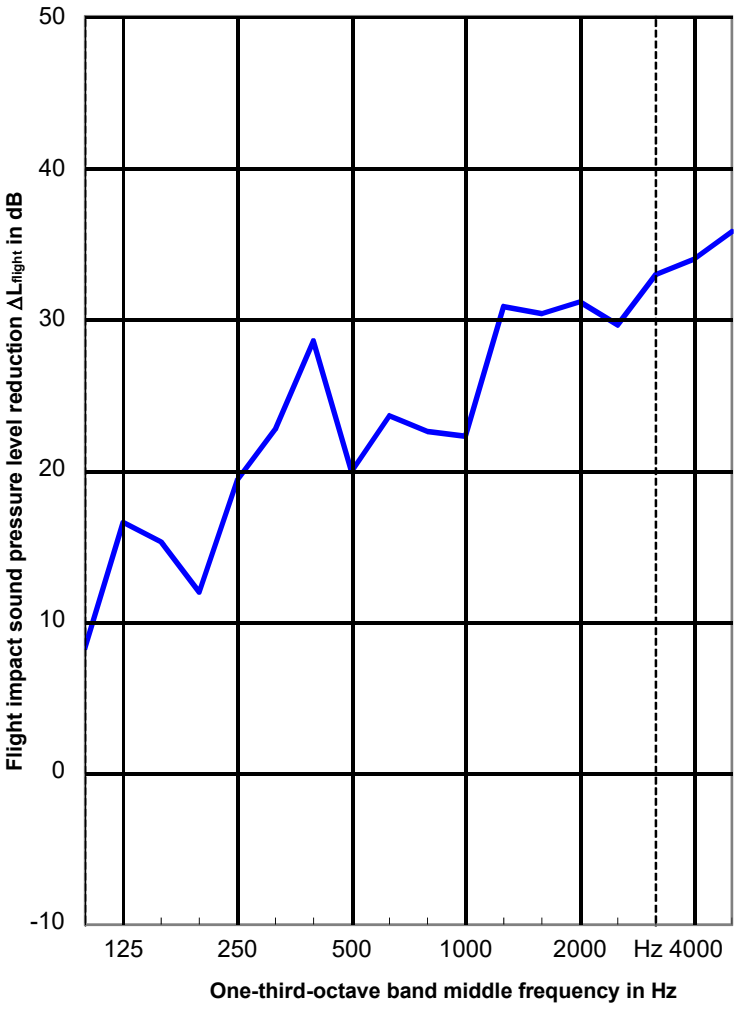
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L_{W,flight}$ = 27 dB

$C_{I,\Delta,flight}$ = -8 dB

$\Delta L_{lin,flight}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	48.8	8.3
125	51.1	16.6
160	59.6	15.3
200	63.8	12.0
250	59.6	19.4
315	61.8	22.7
400	62.1	28.6
500	61.3	19.9
630	61.2	23.6
800	61.2	22.6
1000	63.6	22.2
1250	63.6	30.8
1600	64.4	30.3
2000	63.5	31.1
2500	65.1	29.6
3150	64.9	32.9
4000	63.3	34.0
5000	61.9	35.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
11.7 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

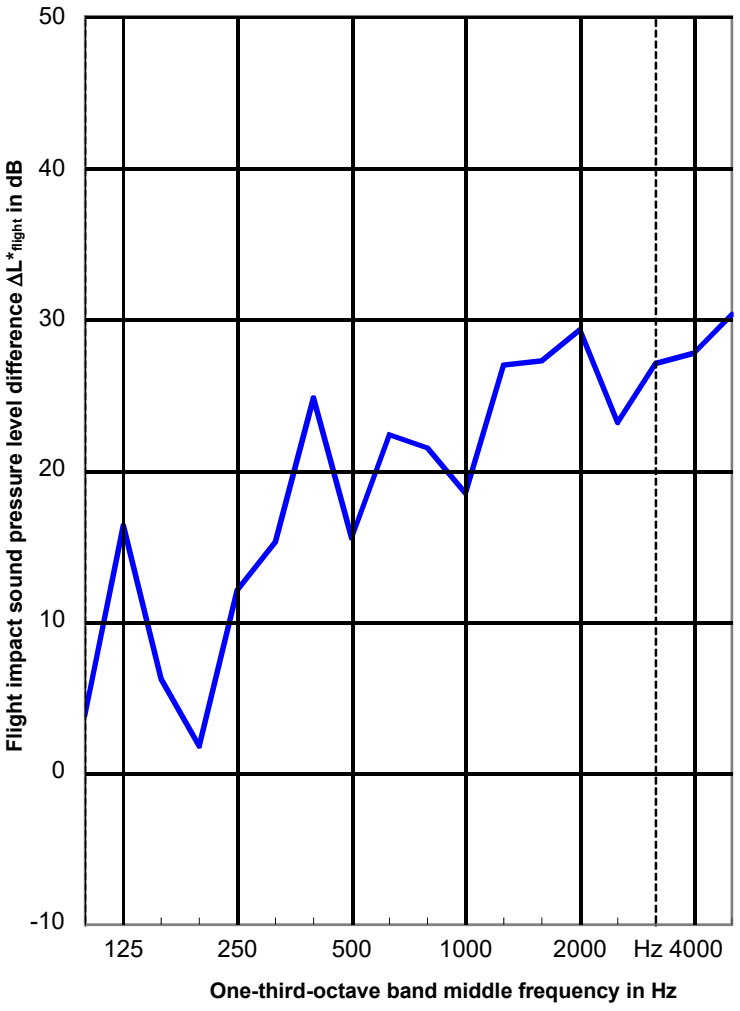
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L^*_{W,flight}$ = 21 dB

$C^*_{I,\Delta,flight}$ = -9 dB

$\Delta L^*_{lin,flight}$ = 12 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	3.9
125	50.9	16.4
160	50.5	6.2
200	53.7	1.8
250	52.3	12.1
315	54.4	15.3
400	58.4	24.8
500	57.0	15.6
630	60.0	22.4
800	60.1	21.5
1000	59.8	18.5
1250	59.7	27.0
1600	61.3	27.2
2000	61.7	29.3
2500	58.7	23.2
3150	59.0	27.1
4000	57.1	27.8
5000	56.5	30.3



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
11.7 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

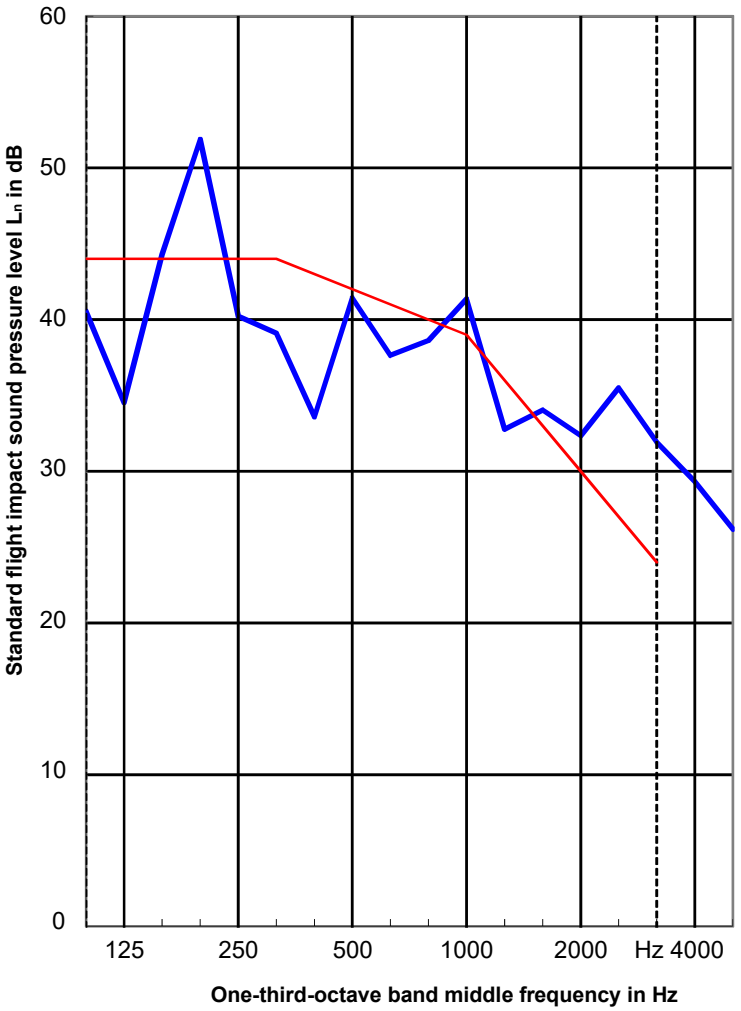
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$L_{n,w,flight}$ = 42 dB

$C_{I,flight}$ = -3 dB

$L_{n,w,flight} + C_{I,flight}$ = 39 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	40.5
125	34.5
160	44.3
200	51.9
250	40.2
315	39.1
400	33.6
500	41.4
630	37.6
800	38.6
1000	41.4
1250	32.8
1600	34.0
2000	32.4
2500	35.5
3150	31.9
4000	29.3
5000	26.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
17.6 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

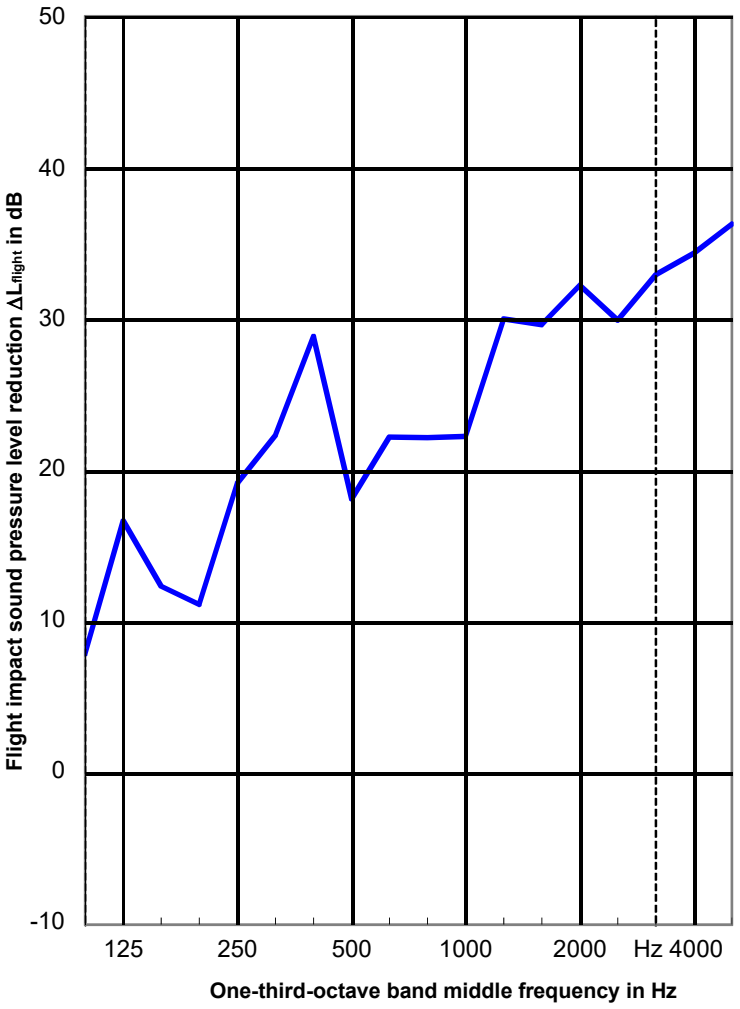
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L_{W,flight}$ = 27 dB

$C_{I,\Delta,flight}$ = -9 dB

$\Delta L_{lin,flight}$ = 18 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	48.8	7.9
125	51.1	16.7
160	59.6	12.4
200	63.8	11.2
250	59.6	19.2
315	61.8	22.3
400	62.1	28.9
500	61.3	18.1
630	61.2	22.2
800	61.2	22.2
1000	63.6	22.2
1250	63.6	30.0
1600	64.4	29.6
2000	63.5	32.2
2500	65.1	29.9
3150	64.9	32.9
4000	63.3	34.4
5000	61.9	36.3



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
17.6 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

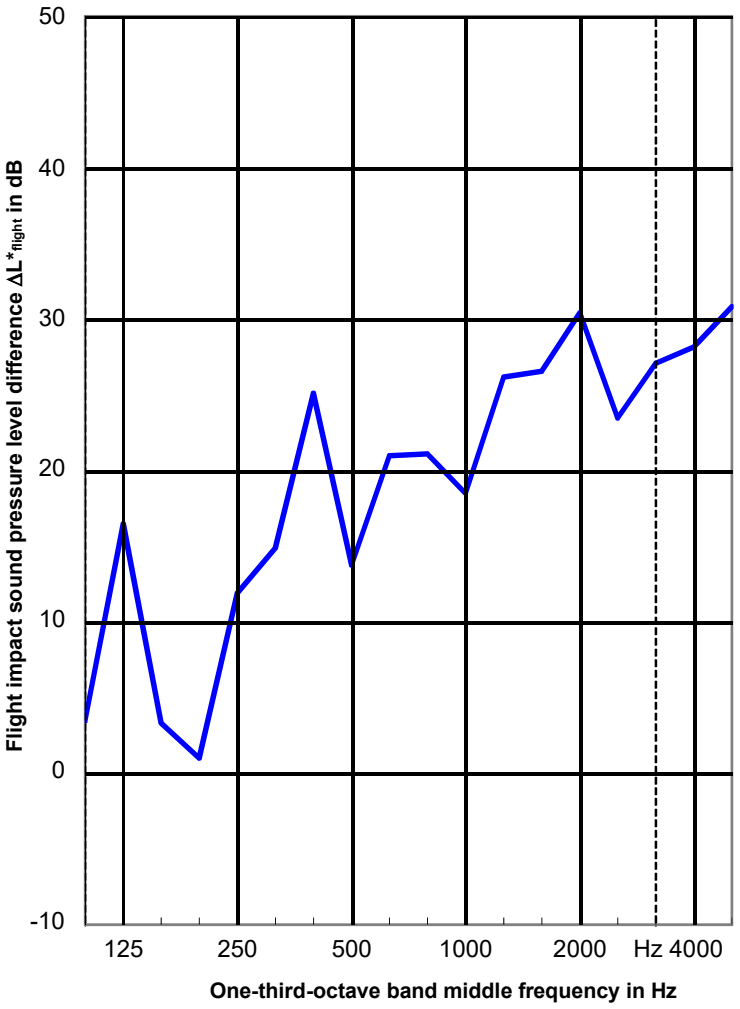
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L^*_{W,flight}$ = 21 dB

$C^*_{I,\Delta,flight}$ = -10 dB

$\Delta L^*_{lin,flight}$ = 11 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	3.5
125	50.9	16.5
160	50.5	3.3
200	53.7	1.0
250	52.3	11.9
315	54.4	14.9
400	58.4	25.1
500	57.0	13.8
630	60.0	21.0
800	60.1	21.1
1000	59.8	18.5
1250	59.7	26.2
1600	61.3	26.5
2000	61.7	30.4
2500	58.7	23.5
3150	59.0	27.1
4000	57.1	28.2
5000	56.5	30.8



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S6
17.6 kN load in addition to dead weight on top step (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S6 with 6 support elements (staircase connection length 1000 mm, width 180 mm)

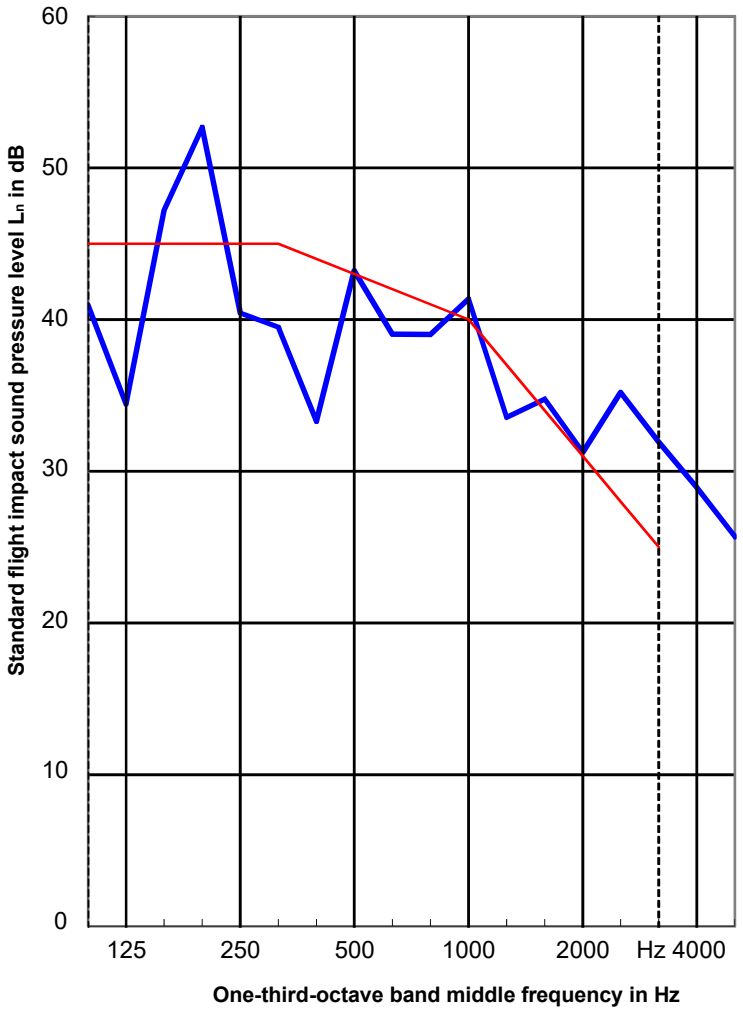
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$L_{n,w,flight}$ = 43 dB

$C_{I,flight}$ = -3 dB

$L_{n,w,flight} + C_{I,flight}$ = 40 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	40.9
125	34.4
160	47.2
200	52.7
250	40.4
315	39.5
400	33.3
500	43.2
630	39.0
800	39.0
1000	41.4
1250	33.6
1600	34.7
2000	31.3
2500	35.2
3150	31.9
4000	28.9
5000	25.7



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
0 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

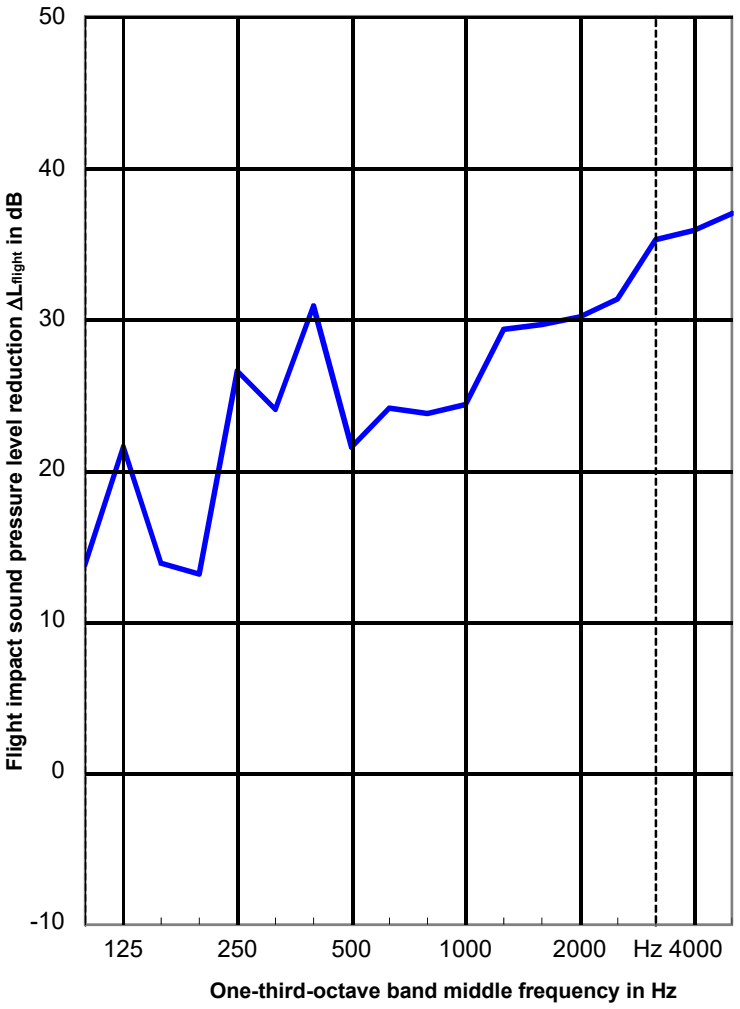
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L_{W,flight}$ = 29 dB

$C_{I,\Delta,flight}$ = -8 dB

$\Delta L_{lin,flight}$ = 21 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	48.8	13.8
125	51.1	21.6
160	59.6	13.9
200	63.8	13.2
250	59.6	26.6
315	61.8	24.0
400	62.1	30.9
500	61.3	21.5
630	61.2	24.1
800	61.2	23.8
1000	63.6	24.3
1250	63.6	29.3
1600	64.4	29.6
2000	63.5	30.1
2500	65.1	31.3
3150	64.9	35.2
4000	63.3	35.9
5000	61.9	37.0



<: Limitation by background noise

1) : Airborne sound flanking path correction

2) : Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
0 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

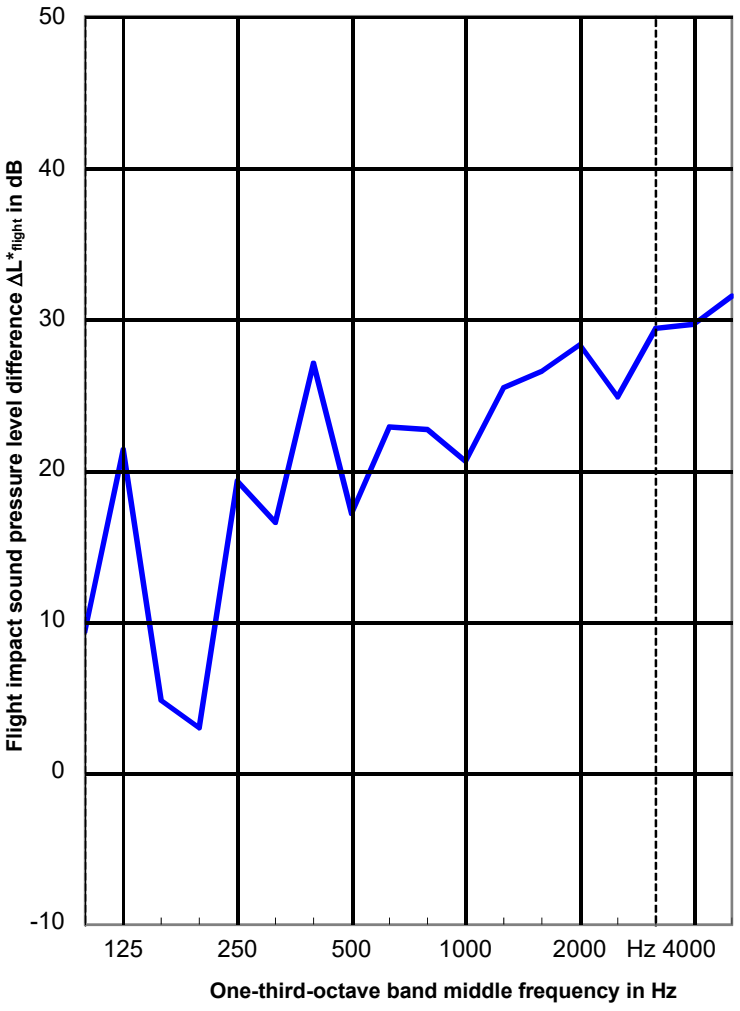
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L^*_{W,flight}$ = 23 dB

$C^*_{I,\Delta,flight}$ = -10 dB

$\Delta L^*_{lin,flight}$ = 13 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	9.4
125	50.9	21.4
160	50.5	4.8
200	53.7	3.0
250	52.3	19.3
315	54.4	16.6
400	58.4	27.1
500	57.0	17.2
630	60.0	22.9
800	60.1	22.7
1000	59.8	20.6
1250	59.7	25.5
1600	61.3	26.5
2000	61.7	28.3
2500	58.7	24.9
3150	59.0	29.4
4000	57.1	29.7
5000	56.5	31.5



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
0 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

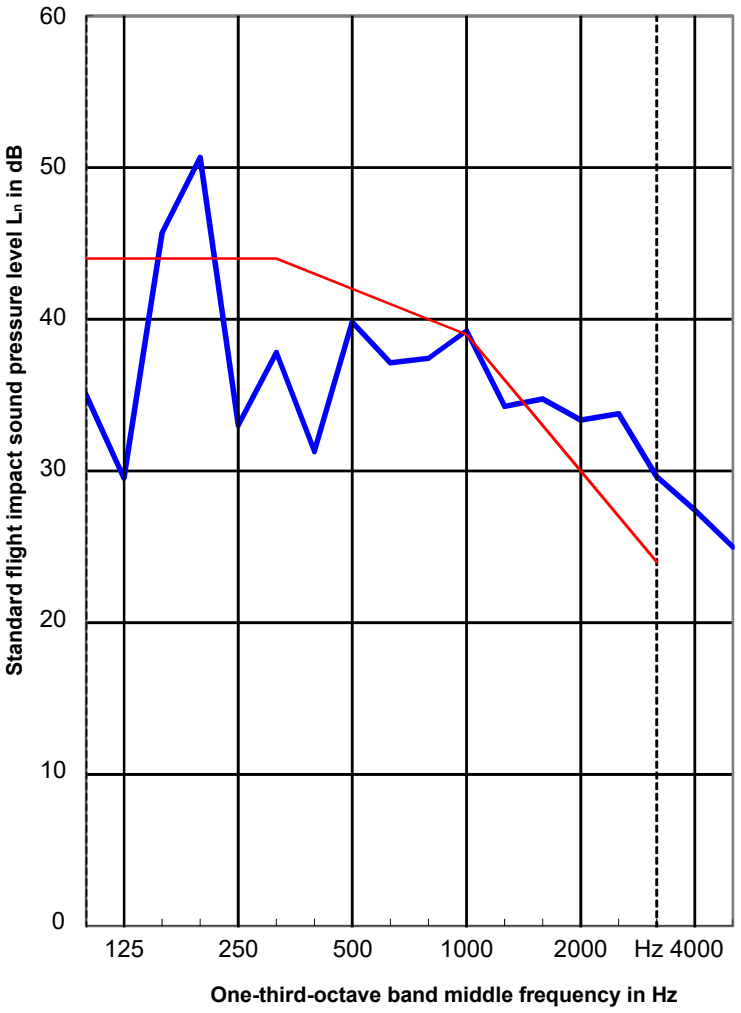
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$L_{n,w,flight}$ = 42 dB

$C_{I,flight}$ = -4 dB

$L_{n,w,flight} + C_{I,flight}$ = 38 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	35.0
125	29.5
160	45.7
200	50.7
250	33.0
315	37.8
400	31.3
500	39.8
630	37.1
800	37.4
1000	39.3
1250	34.3
1600	34.7
2000	33.4
2500	33.8
3150	29.6
4000	27.4
5000	25.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
3.1 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

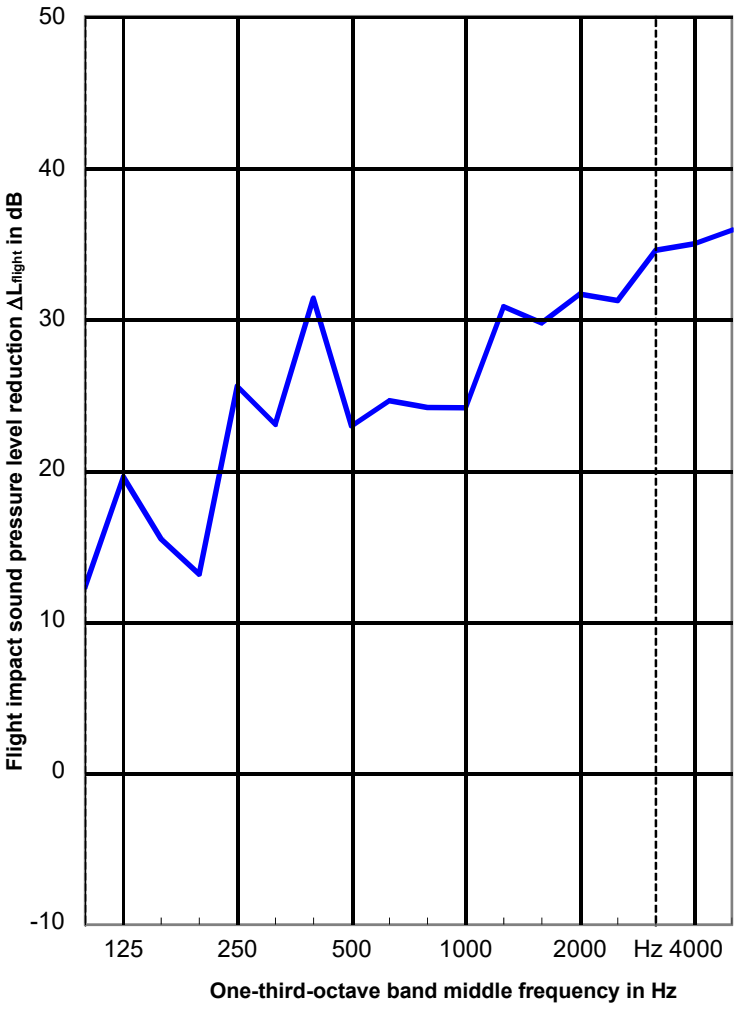
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L_{W,flight}$ = 29 dB

$C_{I,\Delta,flight}$ = -8 dB

$\Delta L_{lin,flight}$ = 21 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	48.8	12.3
125	51.1	19.6
160	59.6	15.5
200	63.8	13.2
250	59.6	25.6
315	61.8	23.0
400	62.1	31.4
500	61.3	22.9
630	61.2	24.6
800	61.2	24.2
1000	63.6	24.1
1250	63.6	30.8
1600	64.4	29.7
2000	63.5	31.6
2500	65.1	31.2
3150	64.9	34.5
4000	63.3	35.0
5000	61.9	35.9



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
3.1 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

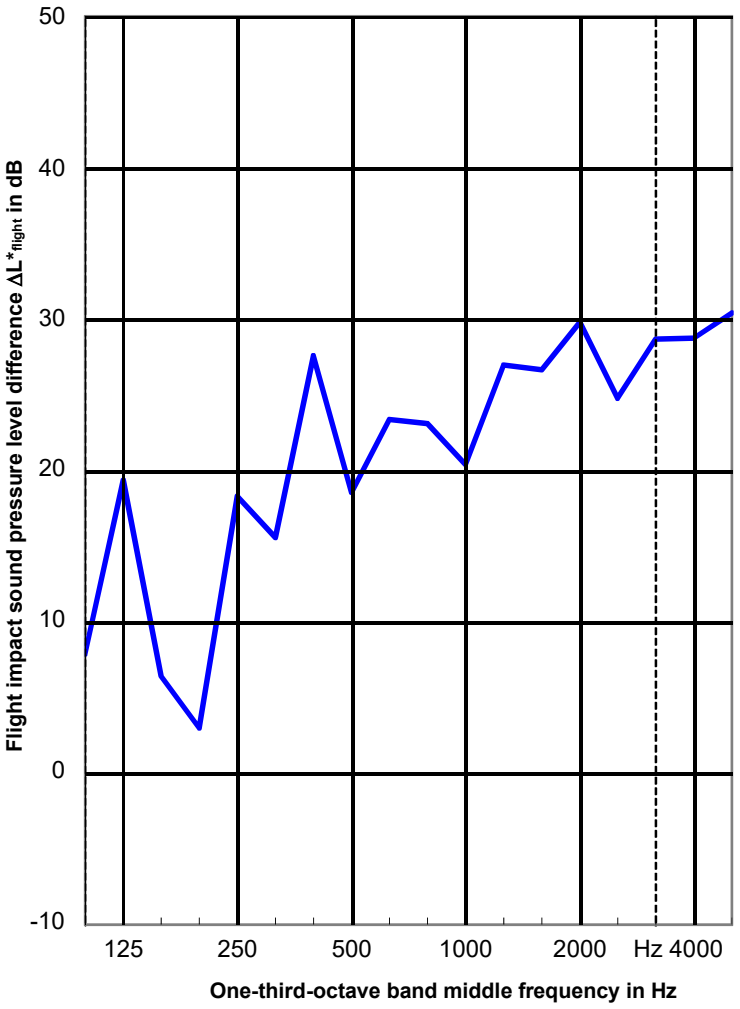
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L^*_{W,flight}$ = 23 dB

$C^*_{I,\Delta,flight}$ = -9 dB

$\Delta L^*_{lin,flight}$ = 14 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	7.9
125	50.9	19.4
160	50.5	6.4
200	53.7	3.0
250	52.3	18.3
315	54.4	15.6
400	58.4	27.6
500	57.0	18.6
630	60.0	23.4
800	60.1	23.1
1000	59.8	20.4
1250	59.7	27.0
1600	61.3	26.6
2000	61.7	29.8
2500	58.7	24.8
3150	59.0	28.7
4000	57.1	28.8
5000	56.5	30.4



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
3.1 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

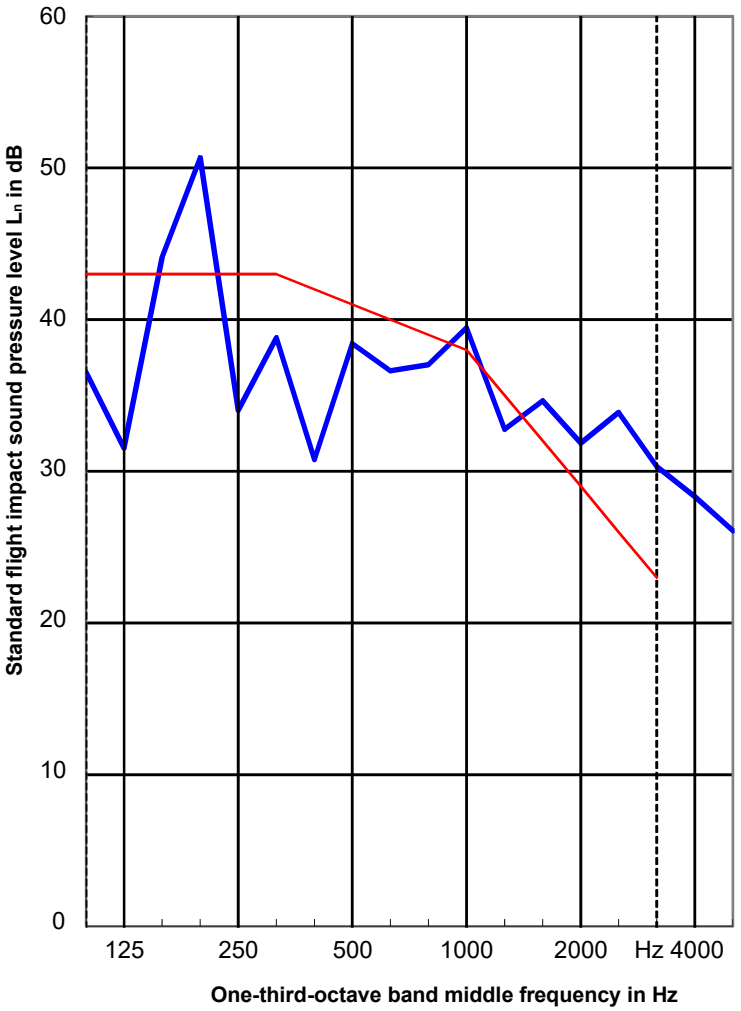
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$L_{n,w,flight}$ = 41 dB

$C_{I,flight}$ = -3 dB

$L_{n,w,flight} + C_{I,flight}$ = 38 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	36.5
125	31.5
160	44.1
200	50.7
250	34.0
315	38.8
400	30.8
500	38.4
630	36.6
800	37.0
1000	39.5
1250	32.8
1600	34.6
2000	31.9
2500	33.9
3150	30.3
4000	28.3
5000	26.1



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
6.2 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

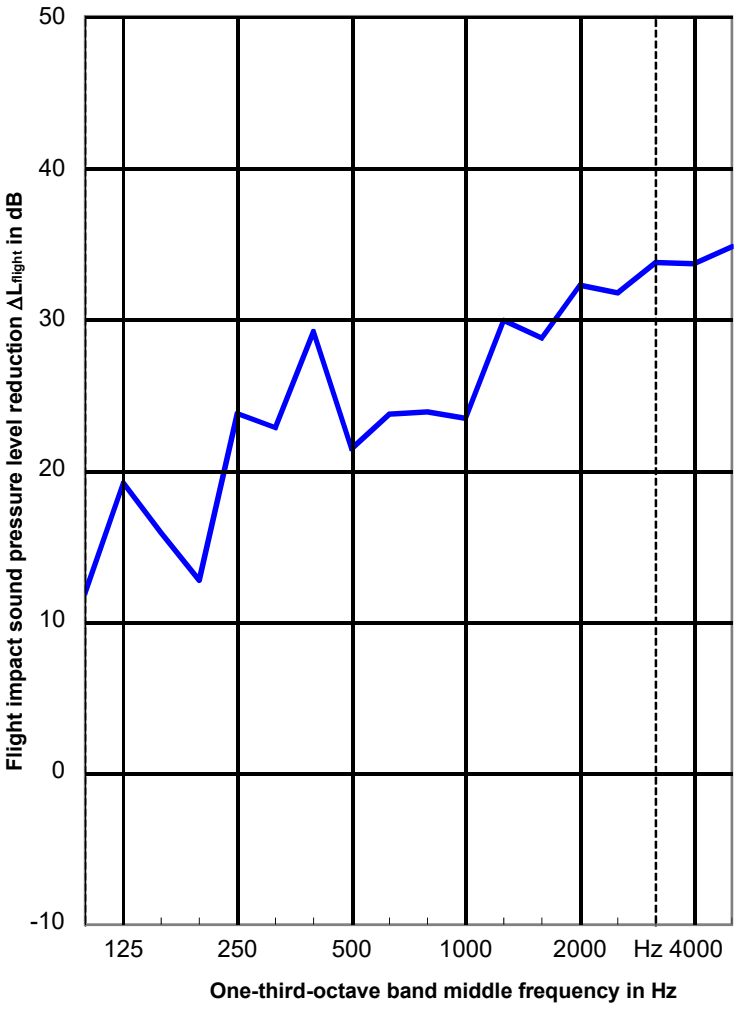
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L_{W,flight}$ = 28 dB

$C_{I,\Delta,flight}$ = -7 dB

$\Delta L_{lin,flight}$ = 21 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	48.8	11.9
125	51.1	19.2
160	59.6	15.9
200	63.8	12.8
250	59.6	23.8
315	61.8	22.8
400	62.1	29.2
500	61.3	21.4
630	61.2	23.7
800	61.2	23.9
1000	63.6	23.4
1250	63.6	29.9
1600	64.4	28.7
2000	63.5	32.2
2500	65.1	31.7
3150	64.9	33.7
4000	63.3	33.7
5000	61.9	34.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
6.2 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

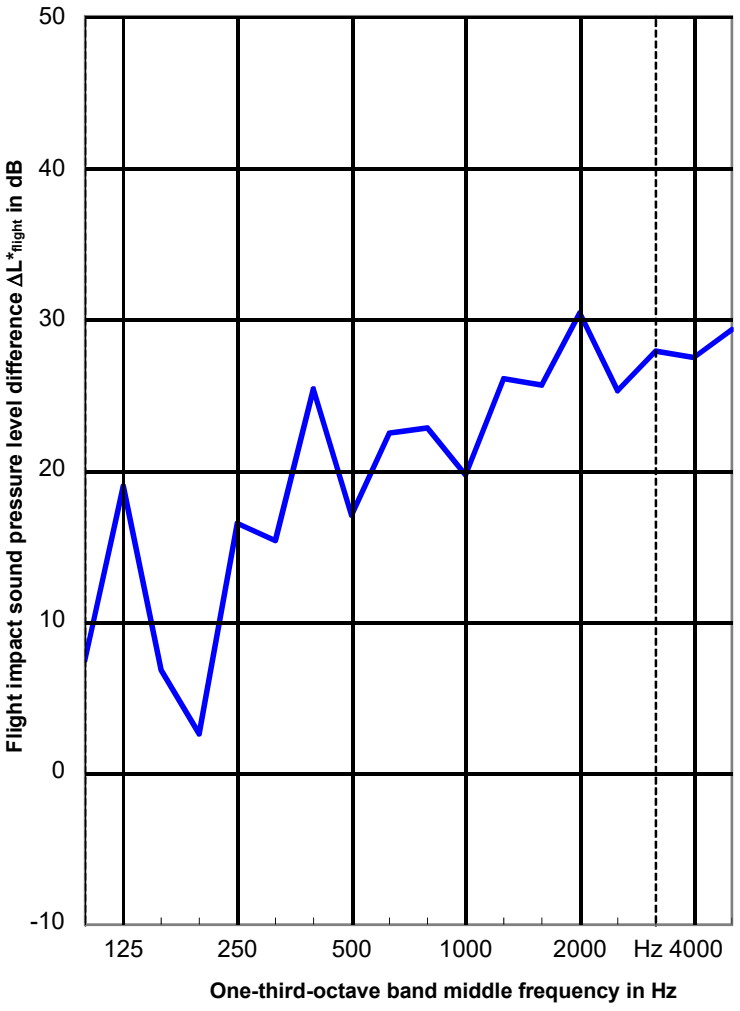
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L^*_{W,flight}$ = 23 dB

$C^*_{I,\Delta,flight}$ = -10 dB

$\Delta L^*_{lin,flight}$ = 13 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	7.5
125	50.9	19.0
160	50.5	6.8
200	53.7	2.6
250	52.3	16.5
315	54.4	15.4
400	58.4	25.4
500	57.0	17.1
630	60.0	22.5
800	60.1	22.8
1000	59.8	19.7
1250	59.7	26.1
1600	61.3	25.6
2000	61.7	30.4
2500	58.7	25.3
3150	59.0	27.9
4000	57.1	27.5
5000	56.5	29.3



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
6.2 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

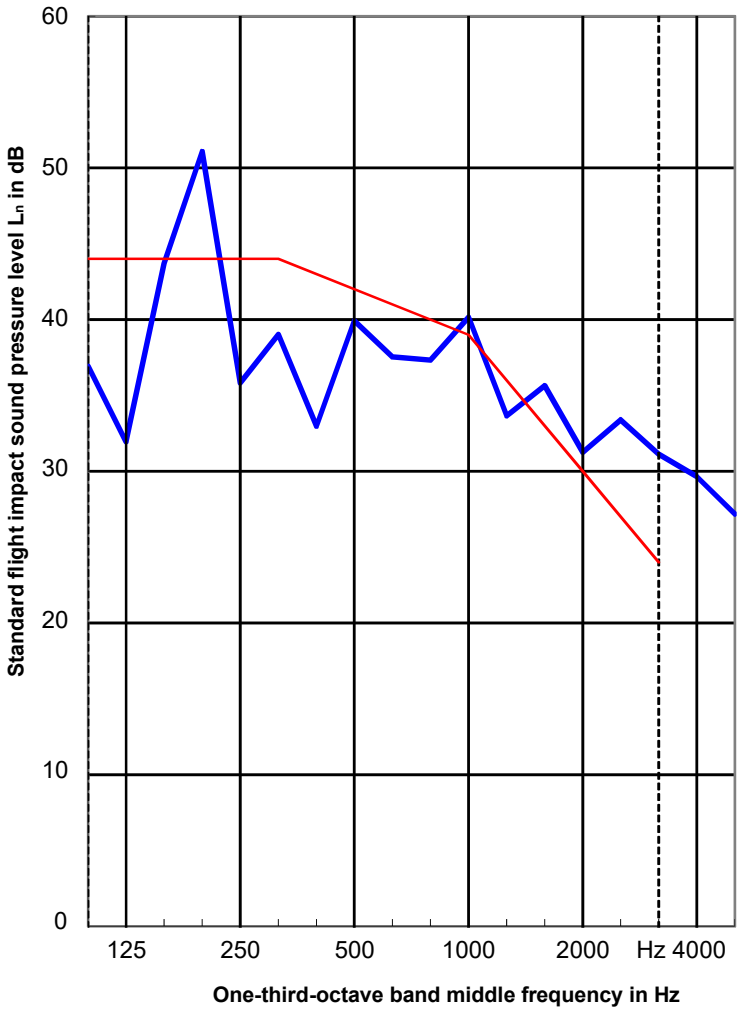
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$L_{n,w,flight}$ = 42 dB

$C_{I,flight}$ = -4 dB

$L_{n,w,flight} + C_{I,flight}$ = 38 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	36.9
125	31.9
160	43.7
200	51.1
250	35.8
315	39.0
400	33.0
500	39.9
630	37.5
800	37.3
1000	40.2
1250	33.7
1600	35.6
2000	31.3
2500	33.4
3150	31.1
4000	29.6
5000	27.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
9.3 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

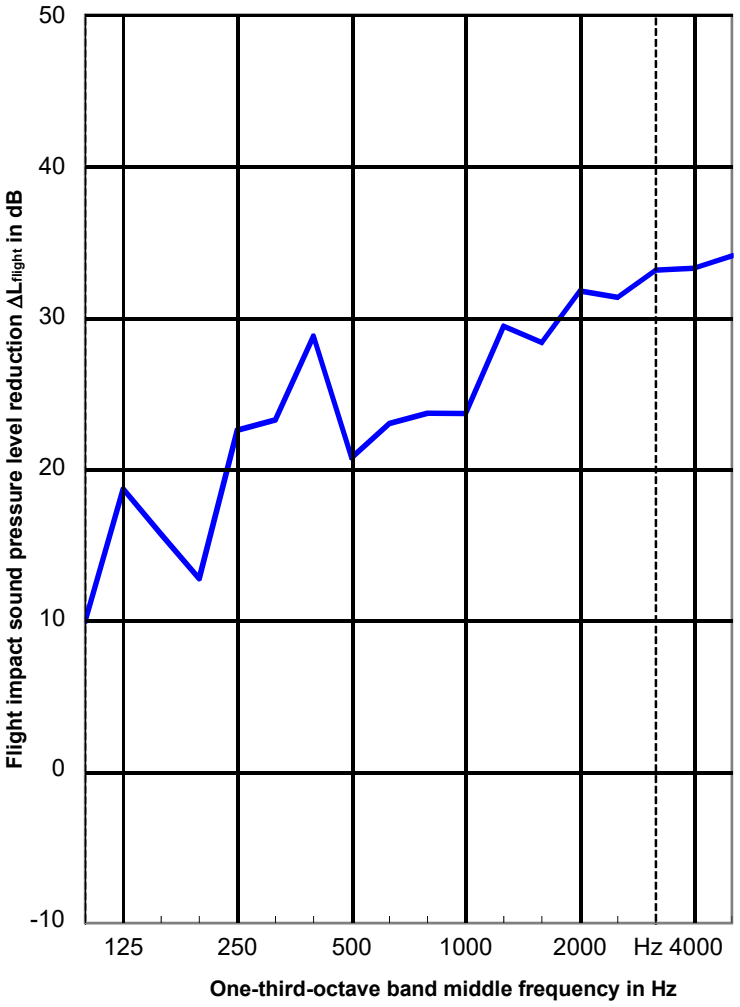
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L_{W,flight}$ = 28 dB

$C_{I,\Delta,flight}$ = -8 dB

$\Delta L_{lin,flight}$ = 20 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	ΔL_{flight} 1/3 Octave band [dB]
100	48.8	9.9
125	51.1	18.7
160	59.6	15.7
200	63.8	12.8
250	59.6	22.6
315	61.8	23.2
400	62.1	28.8
500	61.3	20.7
630	61.2	23.0
800	61.2	23.7
1000	63.6	23.6
1250	63.6	29.4
1600	64.4	28.3
2000	63.5	31.7
2500	65.1	31.3
3150	64.9	33.1
4000	63.3	33.3
5000	61.9	34.1



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Flight impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
9.3 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

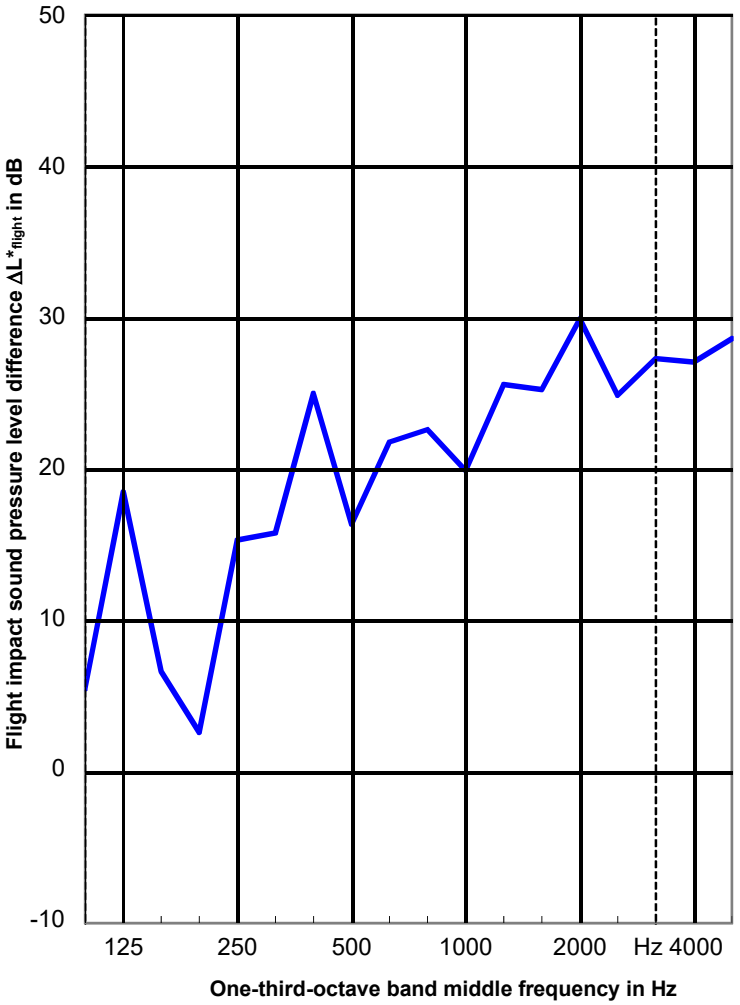
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$\Delta L^*_{W,flight}$ = 22 dB

$C^*_{I,\Delta,flight}$ = -9 dB

$\Delta L^*_{lin,flight}$ = 13 dB

Frequency f [Hz]	$L_{n0,flight}$ 1/3 Octave band [dB]	ΔL^*_{flight} 1/3 Octave band [dB]
100	44.4	5.5
125	50.9	18.5
160	50.5	6.6
200	53.7	2.6
250	52.3	15.3
315	54.4	15.8
400	58.4	25.0
500	57.0	16.4
630	60.0	21.8
800	60.1	22.6
1000	59.8	19.9
1250	59.7	25.6
1600	61.3	25.2
2000	61.7	29.9
2500	58.7	24.9
3150	59.0	27.3
4000	57.1	27.1
5000	56.5	28.6



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard flight impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcostep SP with 15mm elastomer bearing, version type S4
9.3 kN load in addition to dead weight (7.2 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing and stair flight according to DIN 7396
Additional load with hydraulic ram, centred on top step
With FDPL 15 mm distance plate between wall and stair flight
Version S4 with 4 support elements (staircase connection length 1000 mm, width 180 mm)

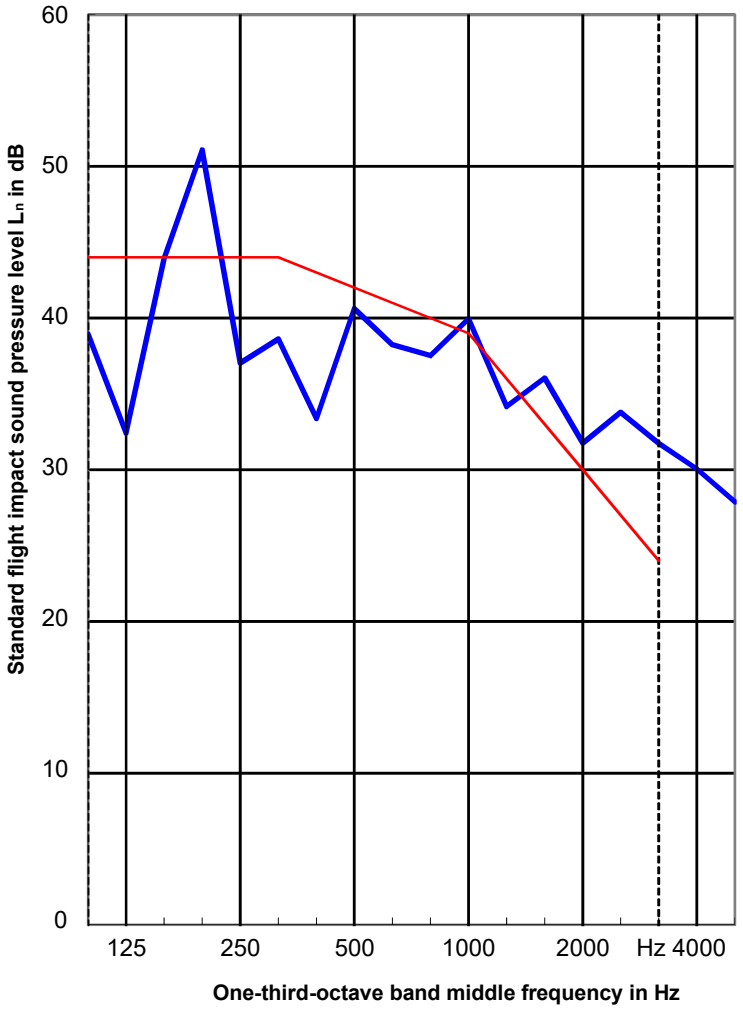
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 27/10/2020**
Temperature: 20.7 °C, relative humidity: 53%, air pressure: 956 hPa

$L_{n,w,flight}$ = 42 dB

$C_{I,flight}$ = -4 dB

$L_{n,w,flight} + C_{I,flight}$ = 38 dB

Frequency f [Hz]	$L_{n,flight}$ 1/3 Octave band [dB]
100	38.9
125	32.4
160	43.9
200	51.1
250	37.0
315	38.6
400	33.4
500	40.6
630	38.2
800	37.5
1000	40.0
1250	34.2
1600	36.0
2000	31.8
2500	33.8
3150	31.7
4000	30.0
5000	27.9



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

SourceStandard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
0 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

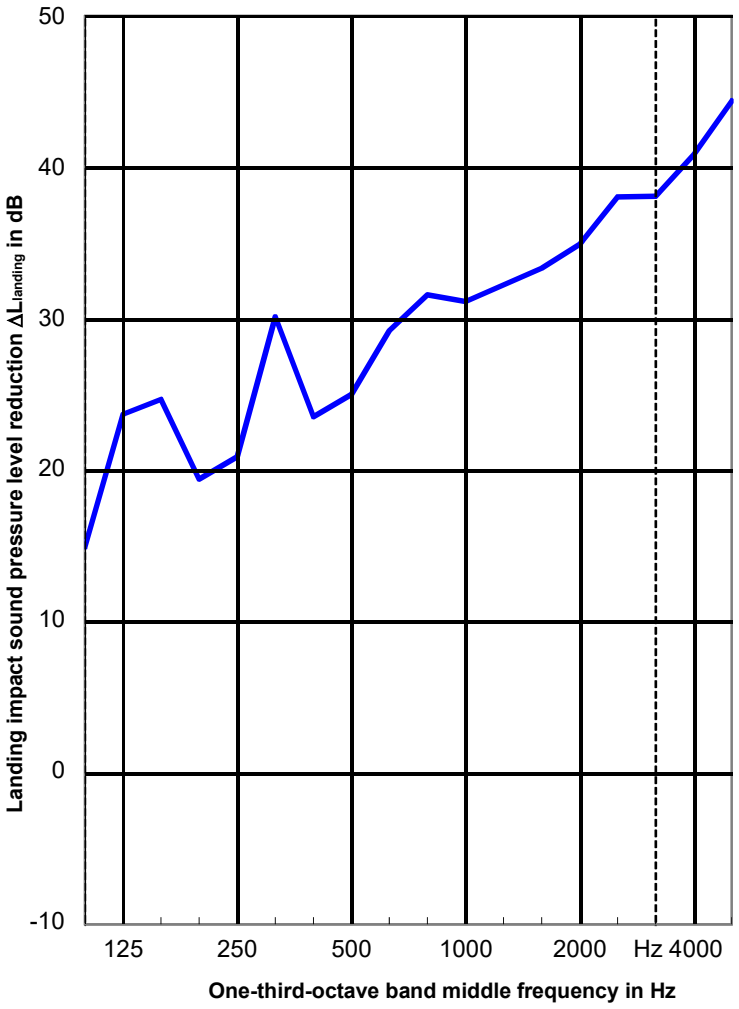
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.1 °C, relative humidity: 46%, air pressure: 967 hPa

$\Delta L_{W,landing}$ = 33 dB

$C_{I,\Delta,landing}$ = -8 dB

$\Delta L_{lin,landing}$ = 25 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	14.9
125	60.8	23.7
160	60.9	24.7
200	63.0	19.4
250	62.8	20.9
315	65.7	30.1
400	65.8	23.5
500	66.2	25.0
630	68.1	29.2
800	68.2	31.6
1000	68.9	31.1
1250	68.7	32.2
1600	68.2	33.3
2000	67.4	34.9
2500	65.8	38.0
3150	63.8	38.1
4000	65.1	40.8
5000	70.0	44.4



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
0 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

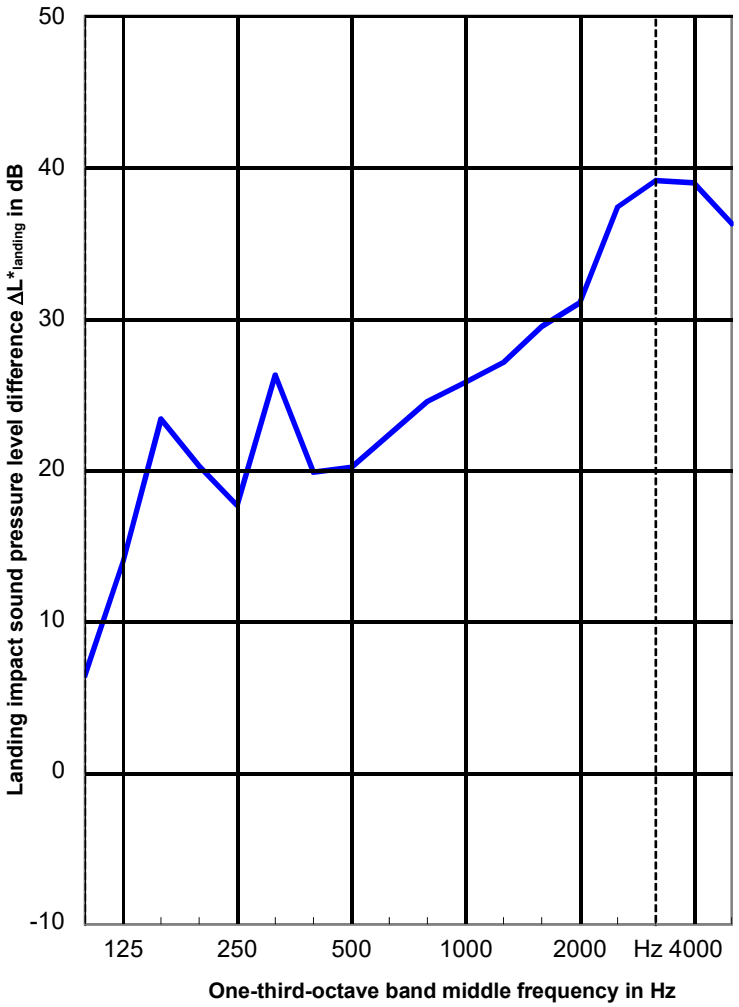
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.1 °C, relative humidity: 46%, air pressure: 967 hPa

$\Delta L^*_{W,landing}$ = 29 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	6.5
125	51.1	14.0
160	59.6	23.4
200	63.8	20.3
250	59.6	17.7
315	61.8	26.3
400	62.1	19.9
500	61.3	20.2
630	61.2	22.4
800	61.2	24.5
1000	63.6	25.8
1250	63.6	27.1
1600	64.4	29.5
2000	63.5	31.1
2500	65.1	37.4
3150	64.9	39.1
4000	63.3	39.0
5000	61.9	36.3



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
0 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

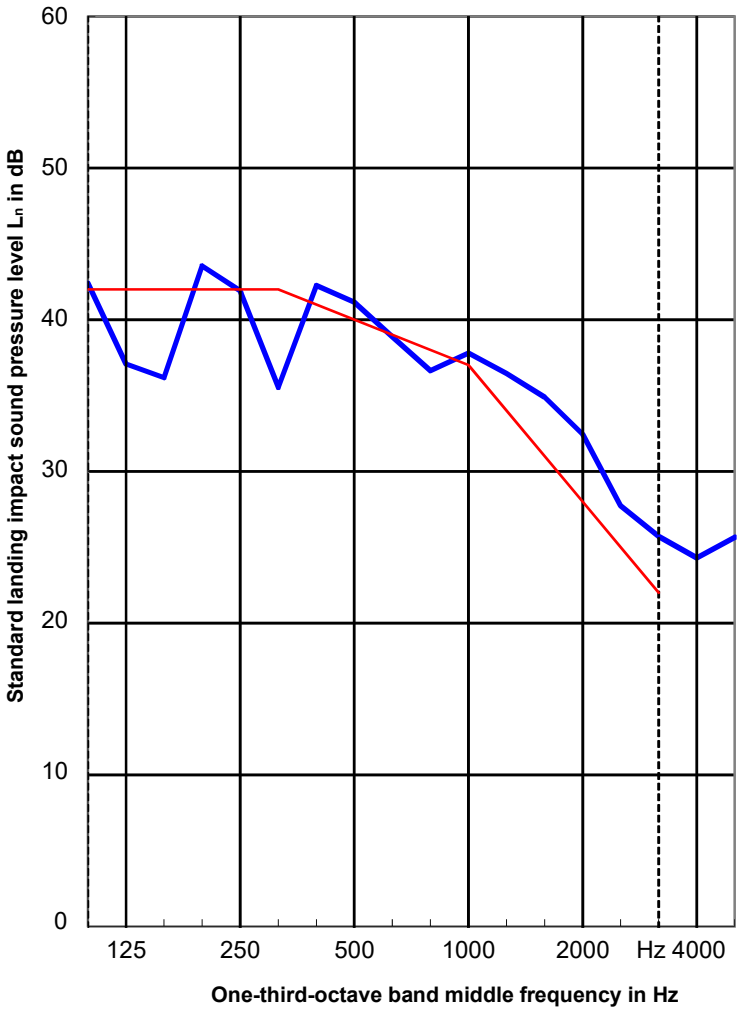
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.1 °C, relative humidity: 46%, air pressure: 967 hPa

$L_{n,w,landing}$ = 40 dB

$C_{I,landing}$ = -4 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 36 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	42.4
125	37.1
160	36.2
200	43.5
250	41.9
315	35.6
400	42.3
500	41.2
630	38.9
800	36.6
1000	37.8
1250	36.5
1600	34.9
2000	32.4
2500	27.7
3150	25.7
4000	24.3
5000	25.7



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
28.9 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

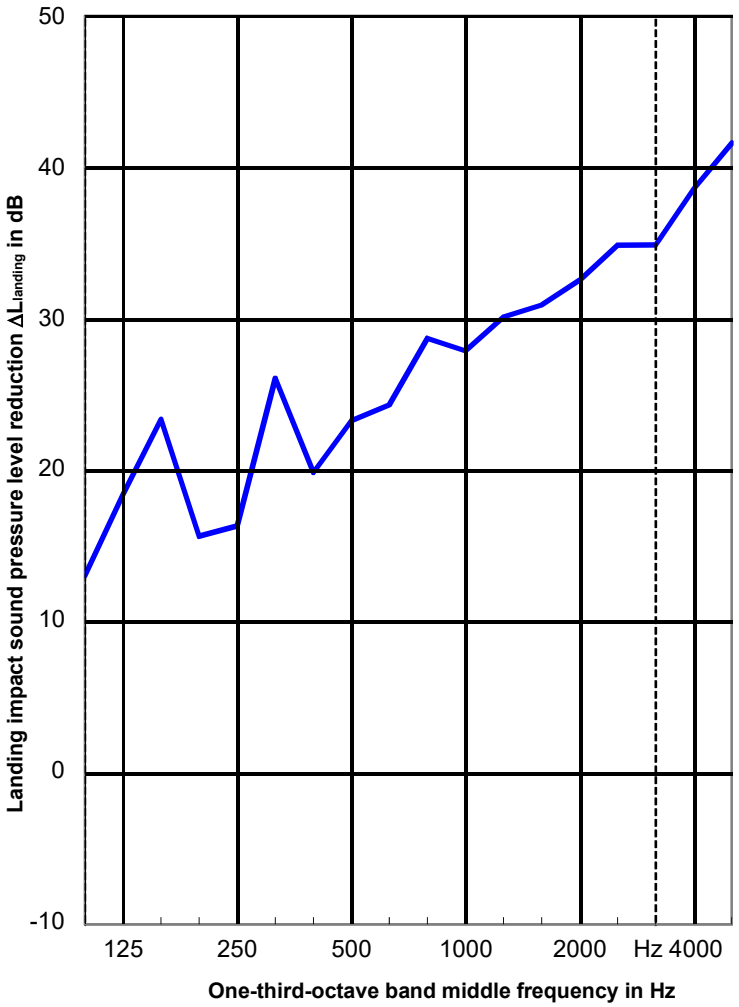
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.1 °C, relative humidity: 46%, air pressure: 967 hPa

$\Delta L_{W,landing}$ = 30 dB

$C_{I,\Delta,landing}$ = -8 dB

$\Delta L_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	13.1
125	60.8	18.4
160	60.9	23.4
200	63.0	15.6
250	62.8	16.3
315	65.7	26.1
400	65.8	19.9
500	66.2	23.3
630	68.1	24.3
800	68.2	28.7
1000	68.9	27.9
1250	68.7	30.1
1600	68.2	30.9
2000	67.4	32.5
2500	65.8	34.9
3150	63.8	34.9
4000	65.1	38.6
5000	70.0	41.6



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
28.9 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

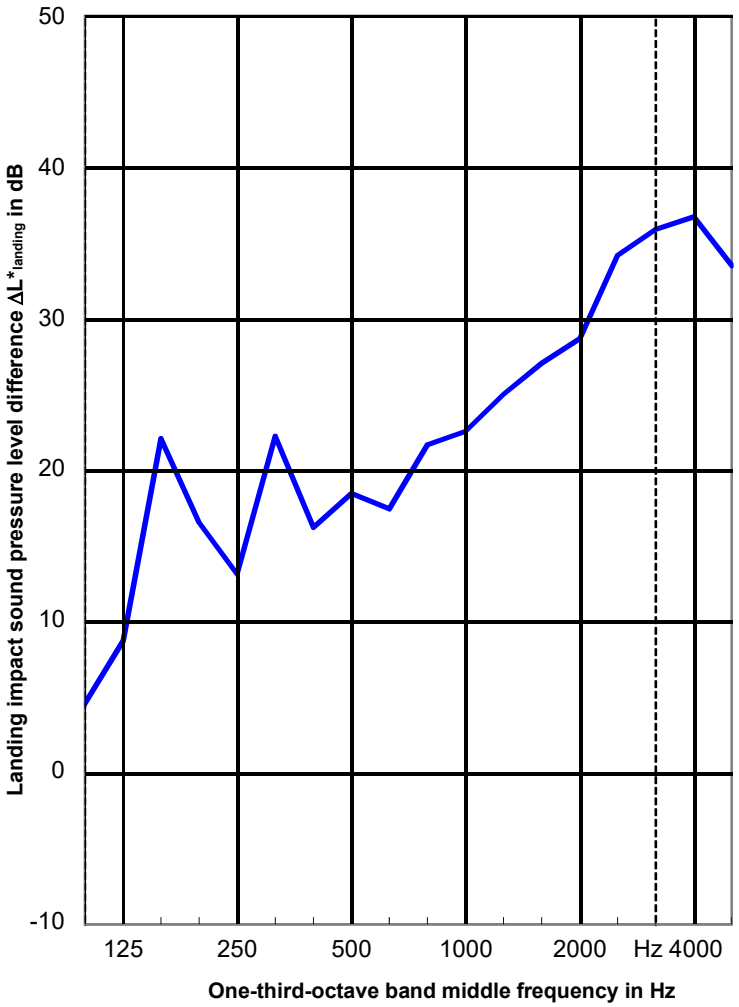
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.1 °C, relative humidity: 46%, air pressure: 967 hPa

$\Delta L^*_{W,landing}$ = 26 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 16 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	4.6
125	51.1	8.7
160	59.6	22.1
200	63.8	16.5
250	59.6	13.1
315	61.8	22.2
400	62.1	16.2
500	61.3	18.4
630	61.2	17.4
800	61.2	21.7
1000	63.6	22.5
1250	63.6	25.0
1600	64.4	27.1
2000	63.5	28.7
2500	65.1	34.2
3150	64.9	35.9
4000	63.3	36.7
5000	61.9	33.5



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
28.9 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

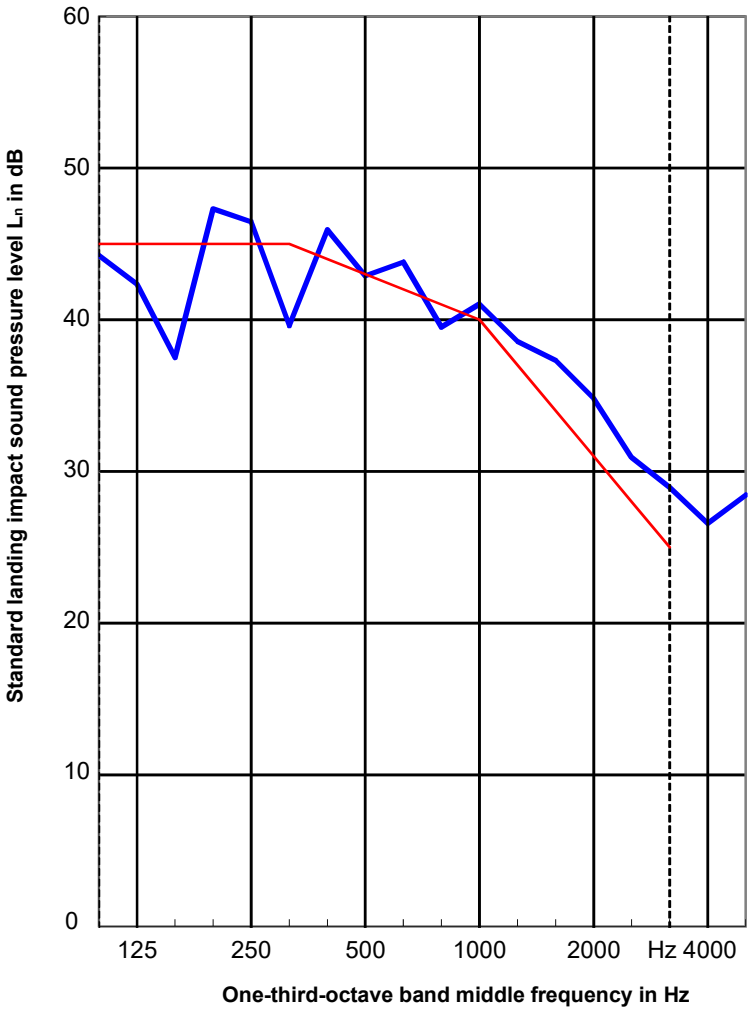
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.1 °C, relative humidity: 46%, air pressure: 967 hPa

$L_{n,w,landing}$ = 43 dB

$C_{I,landing}$ = -4 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 39 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	44.3
125	42.4
160	37.5
200	47.3
250	46.5
315	39.6
400	45.9
500	42.9
630	43.8
800	39.5
1000	41.0
1250	38.6
1600	37.3
2000	34.8
2500	30.9
3150	29.0
4000	26.6
5000	28.4



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
57.8 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

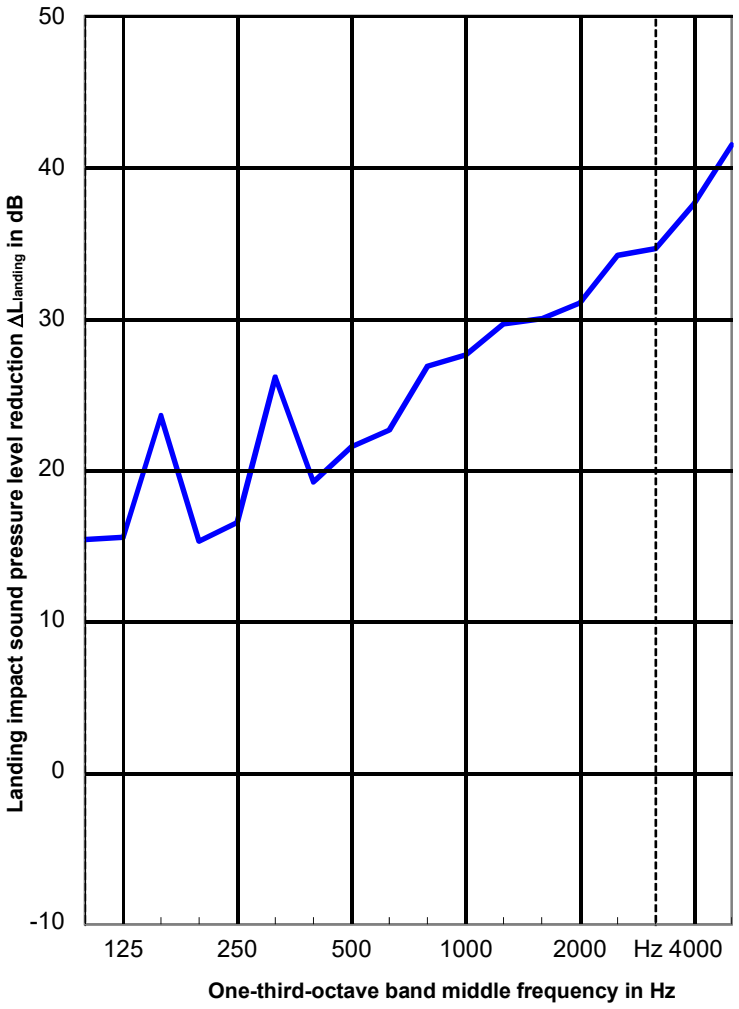
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.2 °C, relative humidity: 47%, air pressure: 967 hPa

$\Delta L_{W,landing}$ = 29 dB

$C_{I,\Delta,landing}$ = -7 dB

$\Delta L_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	15.4
125	60.8	15.5
160	60.9	23.6
200	63.0	15.3
250	62.8	16.5
315	65.7	26.1
400	65.8	19.2
500	66.2	21.5
630	68.1	22.6
800	68.2	26.8
1000	68.9	27.6
1250	68.7	29.7
1600	68.2	30.0
2000	67.4	31.0
2500	65.8	34.2
3150	63.8	34.6
4000	65.1	37.6
5000	70.0	41.5



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
57.8 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

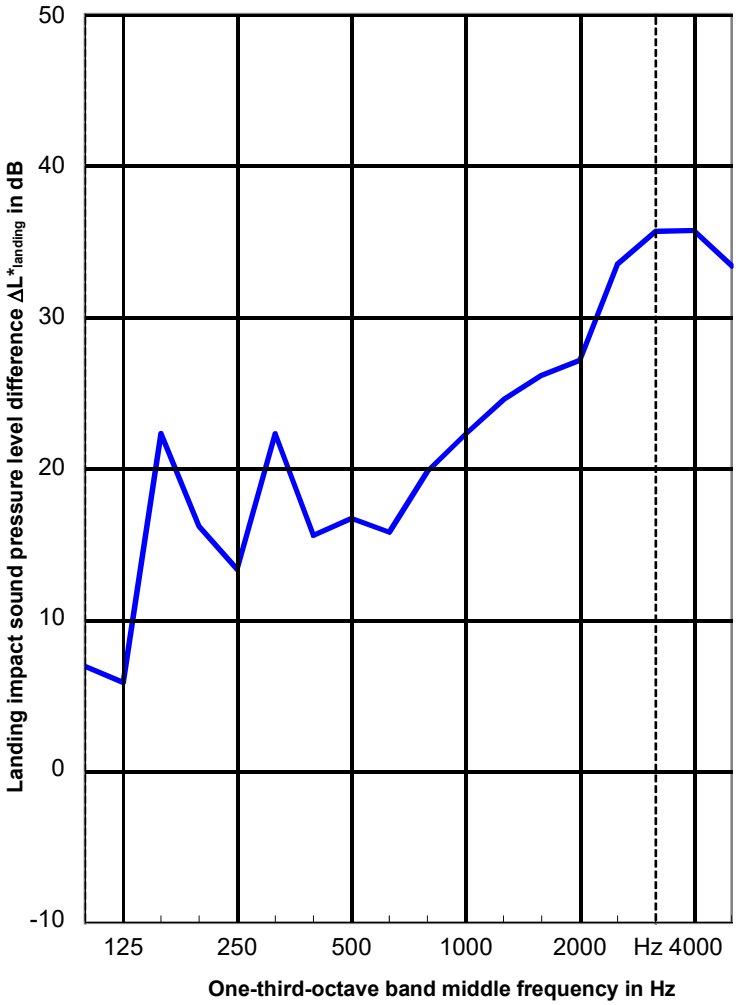
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.2 °C, relative humidity: 47%, air pressure: 967 hPa

$\Delta L^*_{W,landing}$ = 25 dB

$C^*_{I,\Delta,landing}$ = -9 dB

$\Delta L^*_{lin,landing}$ = 16 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	6.9
125	51.1	5.9
160	59.6	22.3
200	63.8	16.2
250	59.6	13.3
315	61.8	22.3
400	62.1	15.6
500	61.3	16.7
630	61.2	15.8
800	61.2	19.8
1000	63.6	22.3
1250	63.6	24.5
1600	64.4	26.1
2000	63.5	27.1
2500	65.1	33.5
3150	64.9	35.7
4000	63.3	35.7
5000	61.9	33.4



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
57.8 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

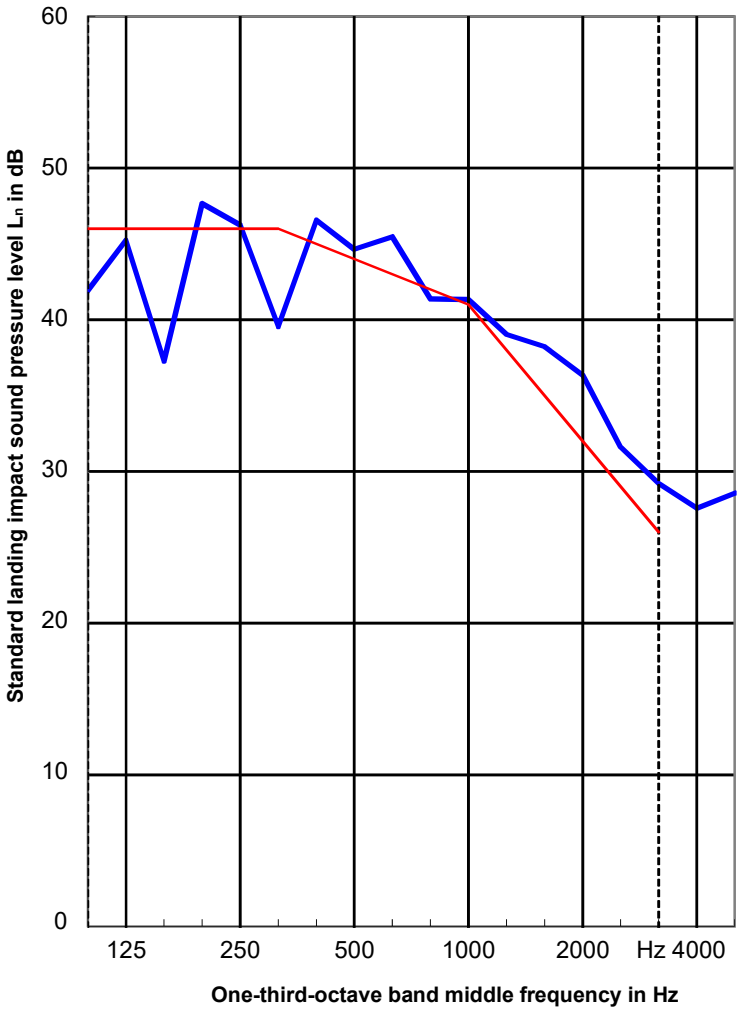
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/12/2020**
Temperature: 20.2 °C, relative humidity: 47%, air pressure: 967 hPa

$L_{n,w,landing}$ = 44 dB

$C_{I,landing}$ = -4 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 40 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	41.9
125	45.2
160	37.3
200	47.7
250	46.3
315	39.6
400	46.6
500	44.6
630	45.5
800	41.4
1000	41.3
1250	39.0
1600	38.2
2000	36.3
2500	31.6
3150	29.2
4000	27.6
5000	28.6



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
86.7 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

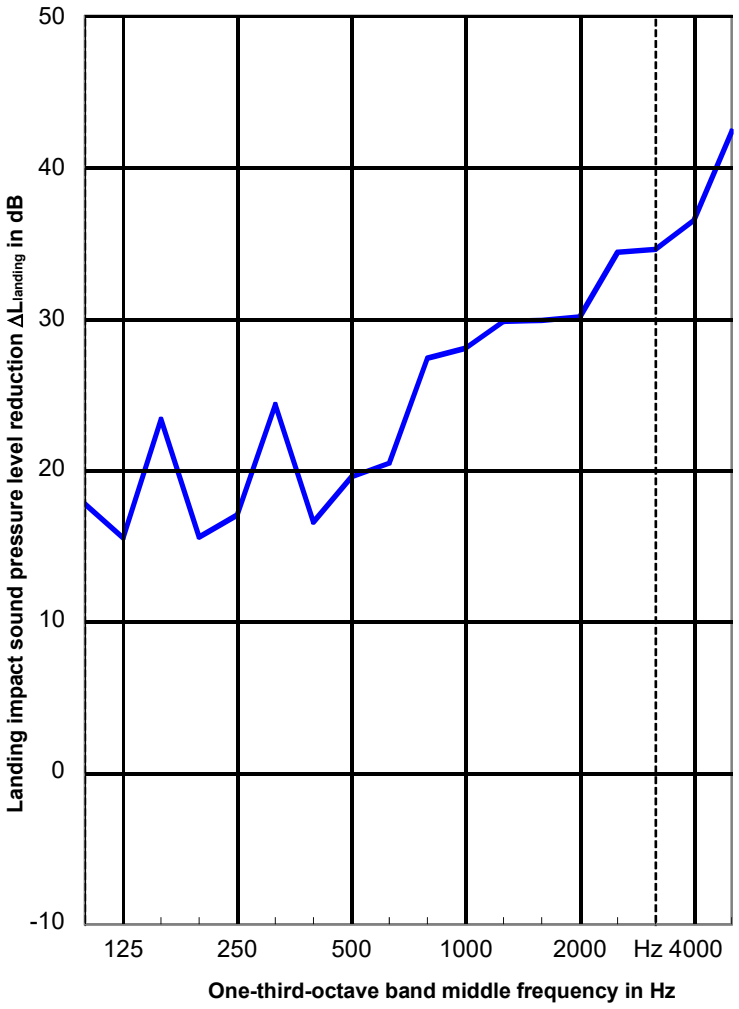
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/01/2021**
Temperature: 20.1 °C, relative humidity: 56%, air pressure: 955 hPa

$\Delta L_{W,landing}$ = 29 dB

$C_{I,\Delta,landing}$ = -8 dB

$\Delta L_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	17.8
125	60.8	15.5
160	60.9	23.3
200	63.0	15.6
250	62.8	17.0
315	65.7	24.3
400	65.8	16.6
500	66.2	19.5
630	68.1	20.5
800	68.2	27.4
1000	68.9	28.0
1250	68.7	29.8
1600	68.2	29.9
2000	67.4	30.1
2500	65.8	34.4
3150	63.8	34.6
4000	65.1	36.5
5000	70.0	42.4



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
86.7 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

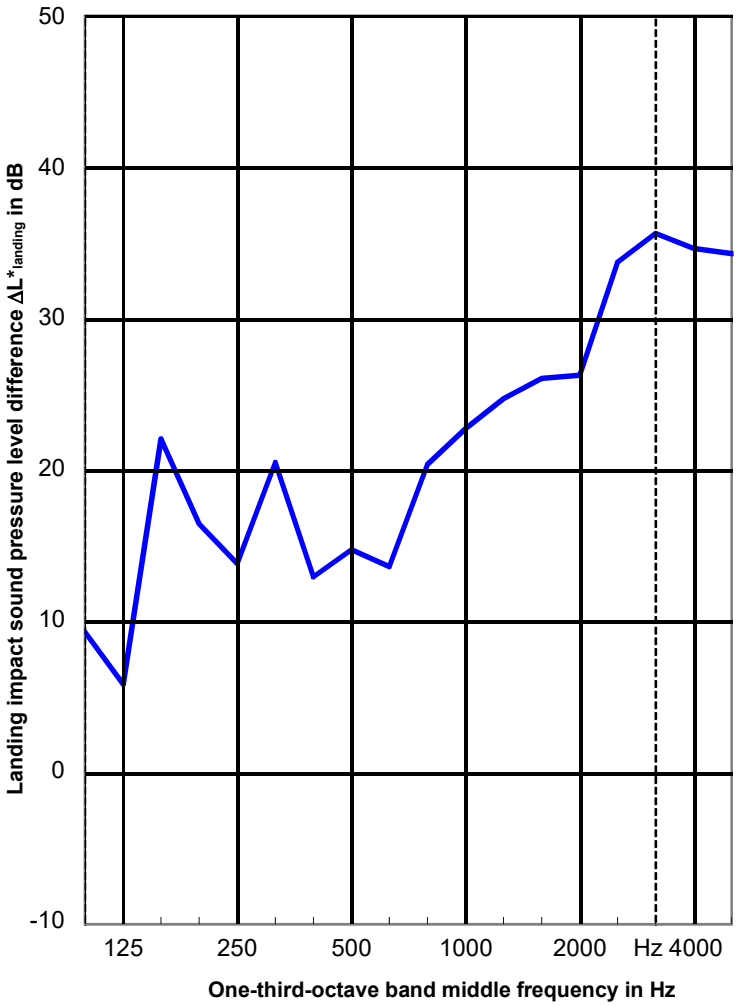
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/01/2021**
Temperature: 20.1 °C, relative humidity: 56%, air pressure: 955 hPa

$\Delta L^*_{W,landing}$ = 25 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 15 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	9.3
125	51.1	5.8
160	59.6	22.0
200	63.8	16.4
250	59.6	13.8
315	61.8	20.5
400	62.1	12.9
500	61.3	14.7
630	61.2	13.6
800	61.2	20.4
1000	63.6	22.7
1250	63.6	24.7
1600	64.4	26.0
2000	63.5	26.2
2500	65.1	33.7
3150	64.9	35.6
4000	63.3	34.6
5000	61.9	34.3



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcosono SP with 15 mm elastomer bearing
86.7 kN load in addition to dead weight of stair landing (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydraulic ram, 55 cm from wall and centred on stair landing centre line

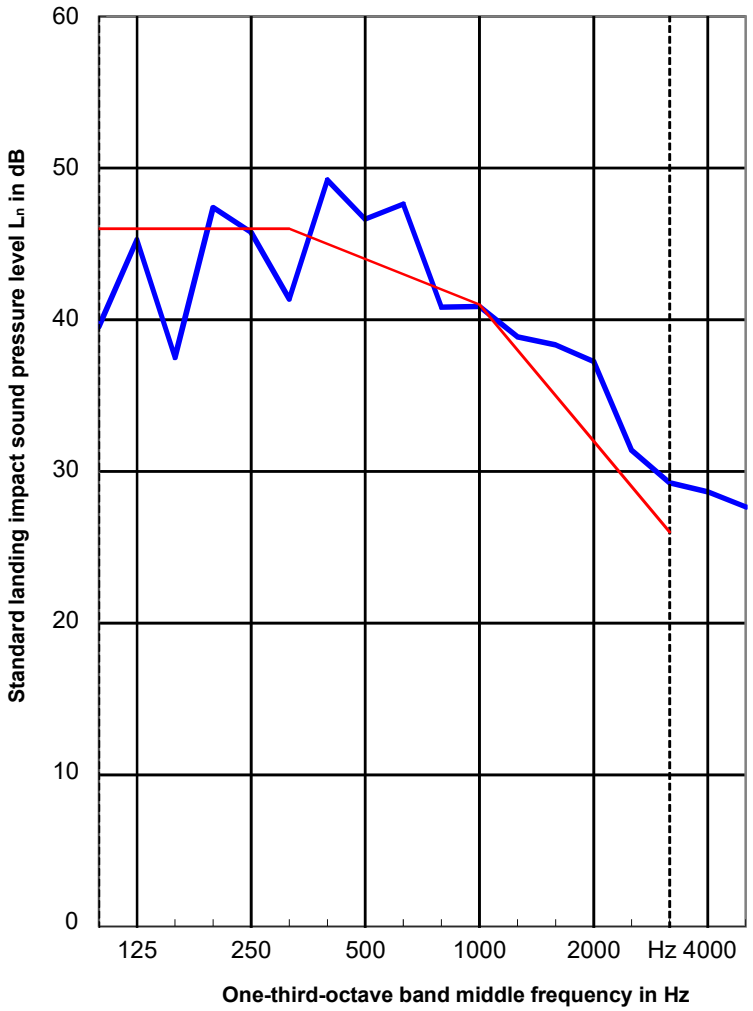
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/01/2021**
Temperature: 20.1 °C, relative humidity: 56%, air pressure: 955 hPa

$L_{n,w,landing}$ = 44 dB

$C_{I,landing}$ = -3 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 41 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	39.6
125	45.3
160	37.5
200	47.4
250	45.8
315	41.3
400	49.2
500	46.6
630	47.6
800	40.8
1000	40.9
1250	38.9
1600	38.3
2000	37.2
2500	31.4
3150	29.2
4000	28.7
5000	27.7



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

—— Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

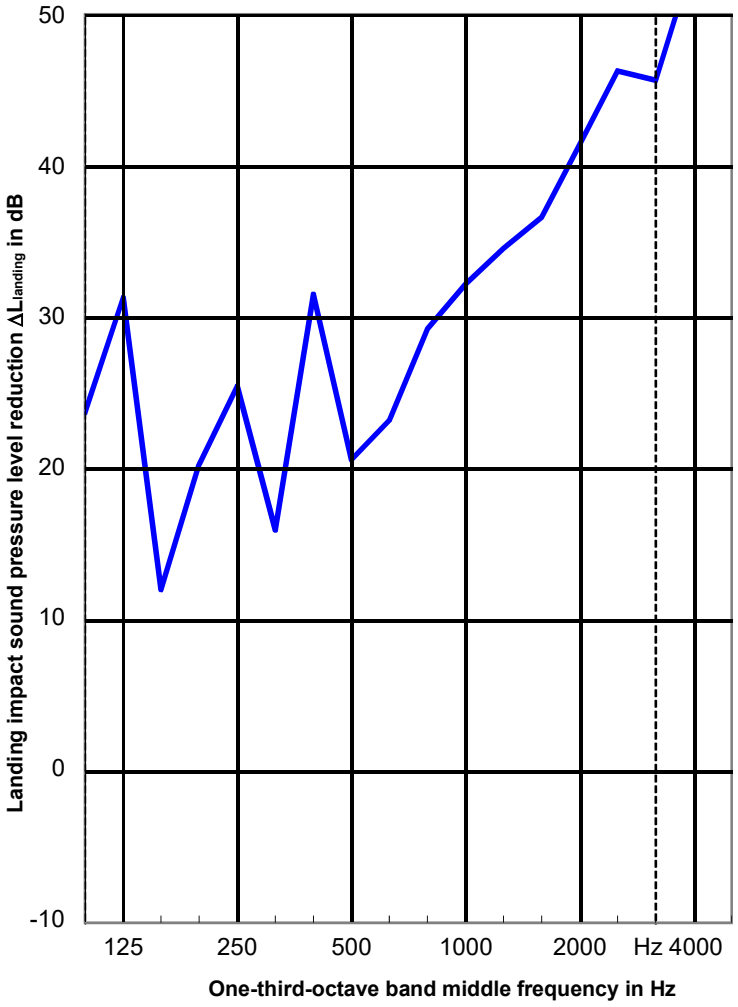
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$\Delta L_{W,landing}$ = 34 dB

$C_{I,\Delta,landing}$ = -12 dB

$\Delta L_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	23.7
125	60.8	1) 31.3
160	60.9	12.0
200	63.0	20.2
250	62.8	25.4
315	65.7	15.9
400	65.8	1) 31.5
500	66.2	20.6
630	68.1	23.2
800	68.2	29.2
1000	68.9	32.2
1250	68.7	34.5
1600	68.2	36.6
2000	67.4	1) 41.4
2500	65.8	1) 46.2
3150	63.8	1) 45.6
4000	65.1	1) 53.7
5000	70.0	< 59.2



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

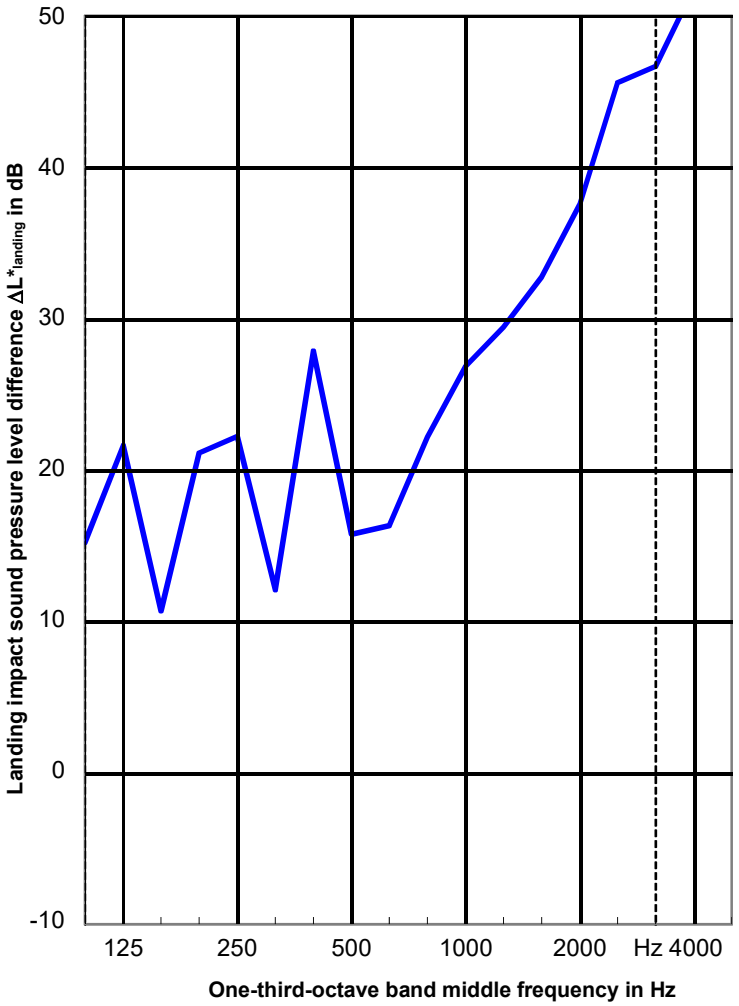
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$\Delta L^*_{W,landing}$ = 29 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	15.2
125	51.1	1) 21.6
160	59.6	10.7
200	63.8	21.1
250	59.6	22.2
315	61.8	12.1
400	62.1	1) 27.8
500	61.3	15.7
630	61.2	16.3
800	61.2	22.2
1000	63.6	26.8
1250	63.6	29.4
1600	64.4	32.7
2000	63.5	1) 37.5
2500	65.1	1) 45.6
3150	64.9	1) 46.7
4000	63.3	1) 51.8
5000	61.9	< 51.1



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

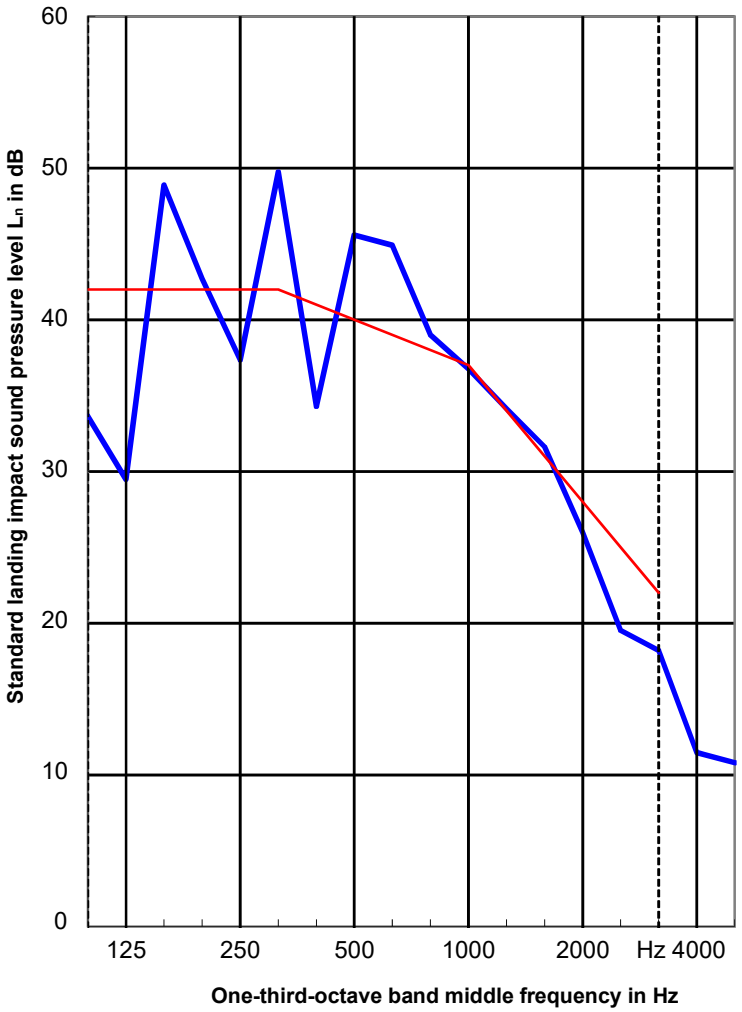
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$L_{n,w,landing}$ = 40 dB

$C_{I,landing}$ = 0 dB

$L_{n,w,landing} + C_{I,landing}$ = 40 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	33.6
125	1) 29.5
160	48.9
200	42.7
250	37.4
315	49.7
400	1) 34.3
500	45.6
630	44.9
800	39.0
1000	36.8
1250	34.2
1600	31.6
2000	1) 26.0
2500	1) 19.5
3150	1) 18.2
4000	1) 11.5
5000	< 10.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
22 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

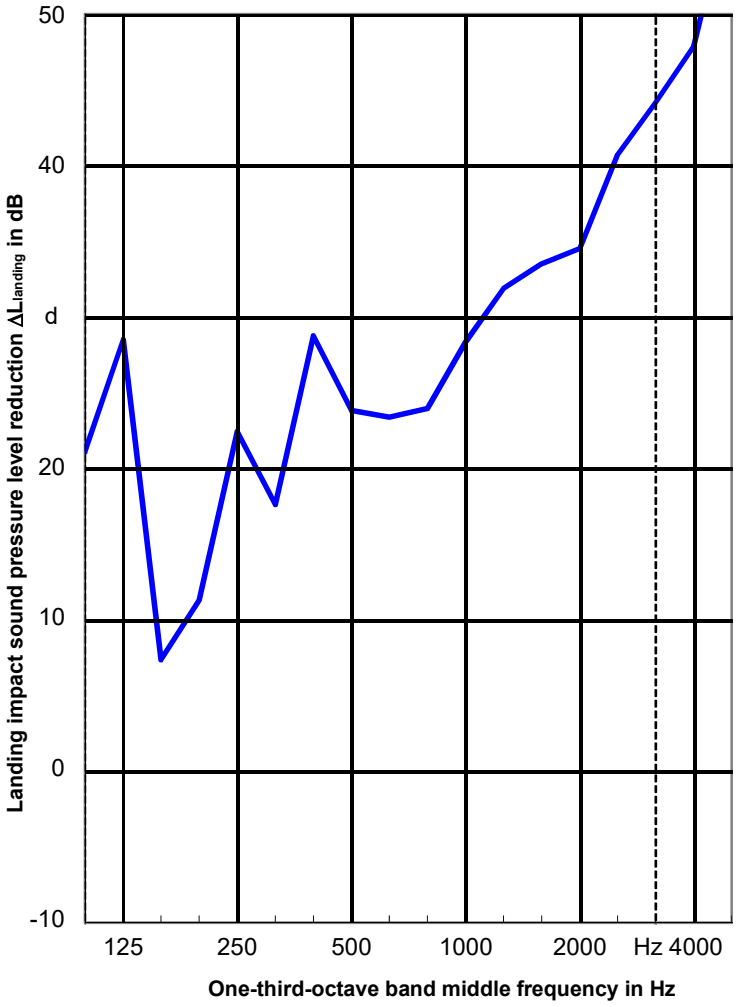
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$\Delta L_{W,landing}$ = 31 dB

$C_{I,\Delta,landing}$ = -12 dB

$\Delta L_{lin,landing}$ = 19 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.1
125	60.8	28.5
160	60.9	7.4
200	63.0	11.3
250	62.8	22.4
315	65.7	17.6
400	65.8	1) 28.7
500	66.2	23.8
630	68.1	23.4
800	68.2	24.0
1000	68.9	28.3
1250	68.7	31.9
1600	68.2	33.5
2000	67.4	34.5
2500	65.8	40.7
3150	63.8	1) 44.2
4000	65.1	47.9
5000	70.0	58.2



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
22 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

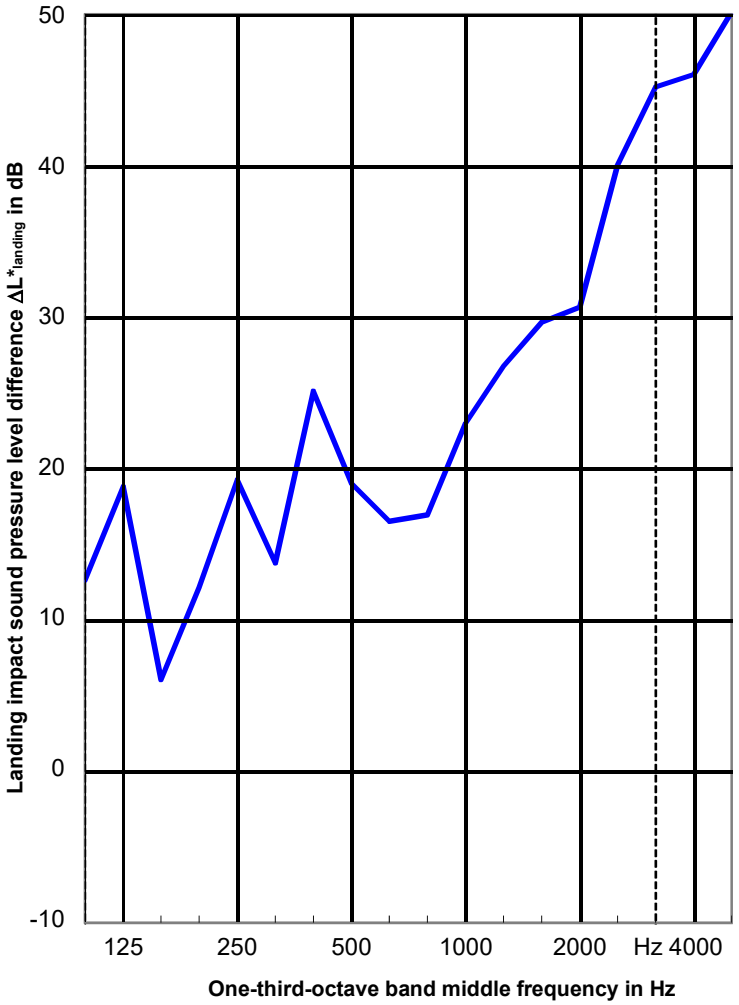
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$\Delta L^*_{W,landing}$ = 27 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 16 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	12.6
125	51.1	18.8
160	59.6	6.1
200	63.8	12.1
250	59.6	19.2
315	61.8	13.8
400	62.1	1) 25.1
500	61.3	19.0
630	61.2	16.5
800	61.2	16.9
1000	63.6	23.0
1250	63.6	26.8
1600	64.4	29.7
2000	63.5	30.6
2500	65.1	40.0
3150	64.9	1) 45.2
4000	63.3	46.0
5000	61.9	50.2



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
22 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

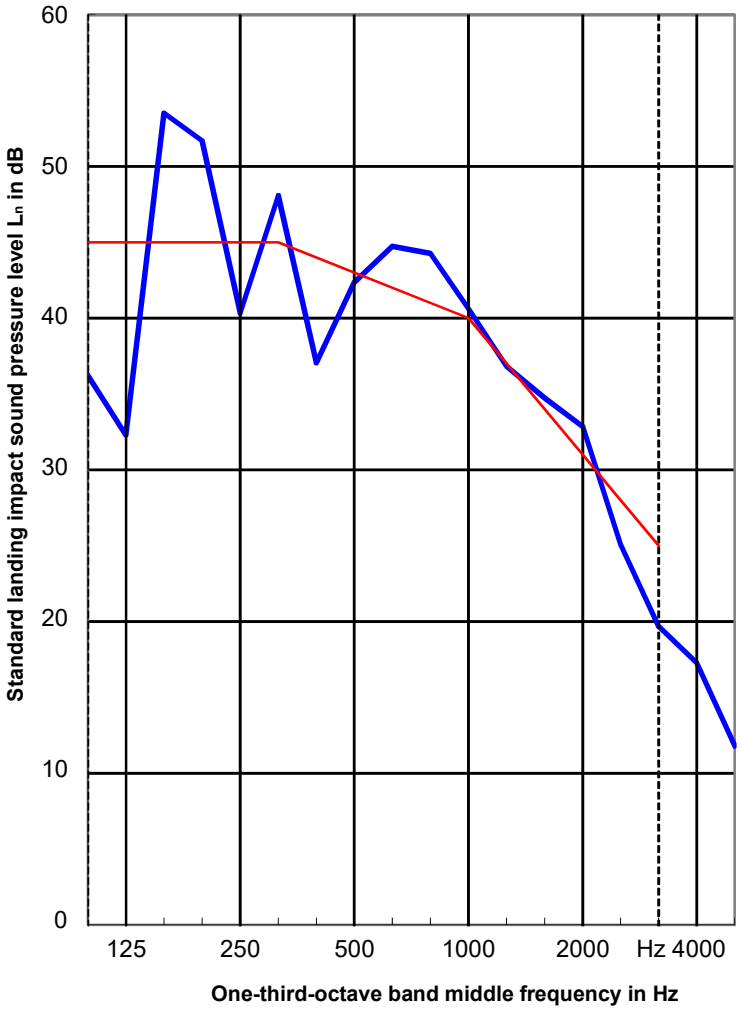
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$L_{n,w,landing}$ = 43 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 42 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	36.2
125	32.3
160	53.5
200	51.7
250	40.3
315	48.1
400	1) 37.1
500	42.4
630	44.7
800	44.3
1000	40.6
1250	36.8
1600	34.7
2000	32.8
2500	25.1
3150	1) 19.7
4000	17.3
5000	11.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
44.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

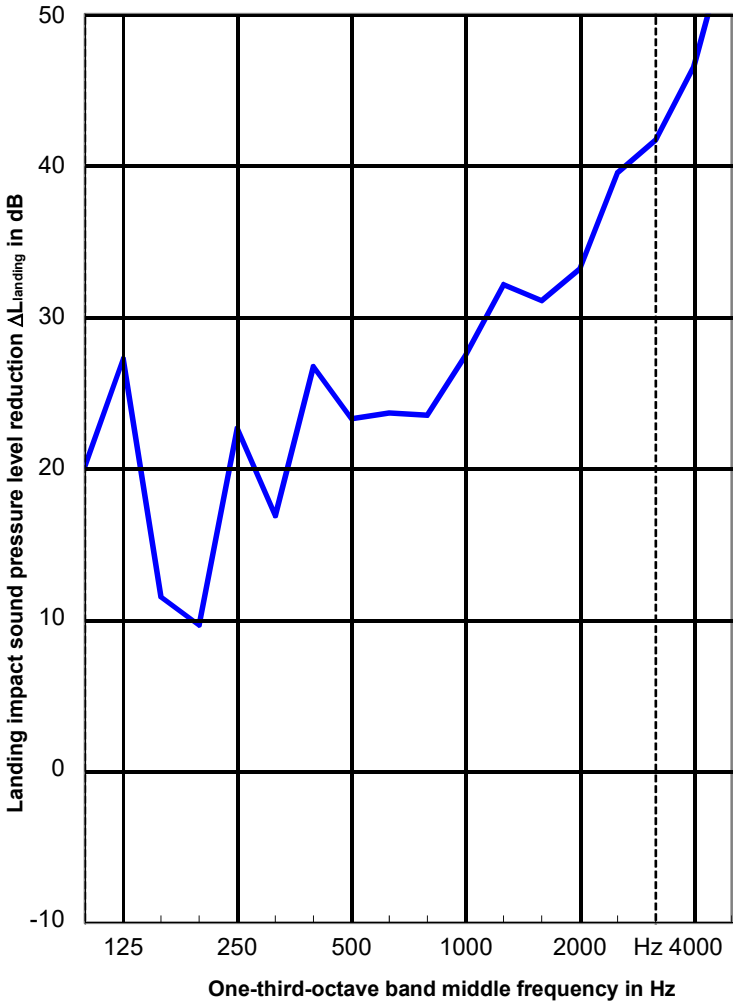
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$\Delta L_{W,landing}$ = 30 dB

$C_{I,\Delta,landing}$ = -10 dB

$\Delta L_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	20.1
125	60.8	27.2
160	60.9	11.5
200	63.0	9.6
250	62.8	22.6
315	65.7	16.9
400	65.8	1) 26.7
500	66.2	23.3
630	68.1	23.6
800	68.2	23.5
1000	68.9	27.4
1250	68.7	32.1
1600	68.2	31.1
2000	67.4	33.2
2500	65.8	39.5
3150	63.8	41.7
4000	65.1	46.5
5000	70.0	55.7



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
44.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

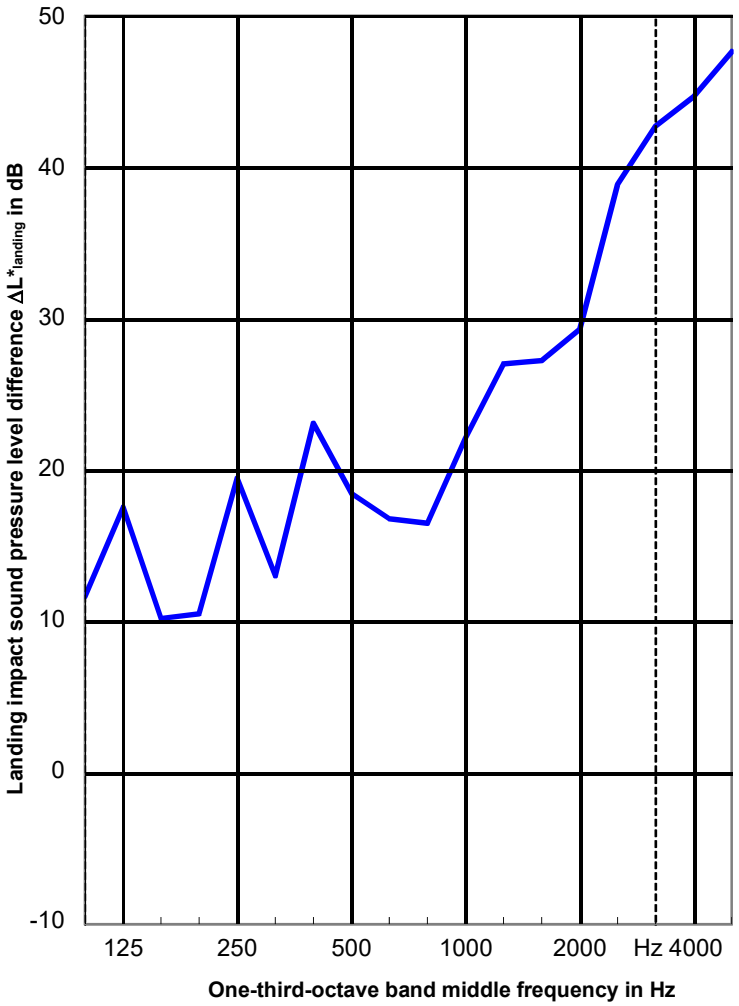
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$\Delta L^*_{W,landing}$ = 26 dB

$C^*_{I,\Delta,landing}$ = -9 dB

$\Delta L^*_{lin,landing}$ = 17 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	11.7
125	51.1	17.5
160	59.6	10.2
200	63.8	10.5
250	59.6	19.4
315	61.8	13.0
400	62.1	1) 23.1
500	61.3	18.4
630	61.2	16.8
800	61.2	16.5
1000	63.6	22.1
1250	63.6	27.0
1600	64.4	27.2
2000	63.5	29.3
2500	65.1	38.9
3150	64.9	42.7
4000	63.3	44.7
5000	61.9	47.6



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
44.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 31%, air pressure: 970 hPa

$L_{n,w,landing}$ = 43 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 42 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	37.2
125	33.6
160	49.4
200	53.3
250	40.1
315	48.8
400	1) 39.1
500	42.9
630	44.5
800	44.7
1000	41.5
1250	36.6
1600	37.2
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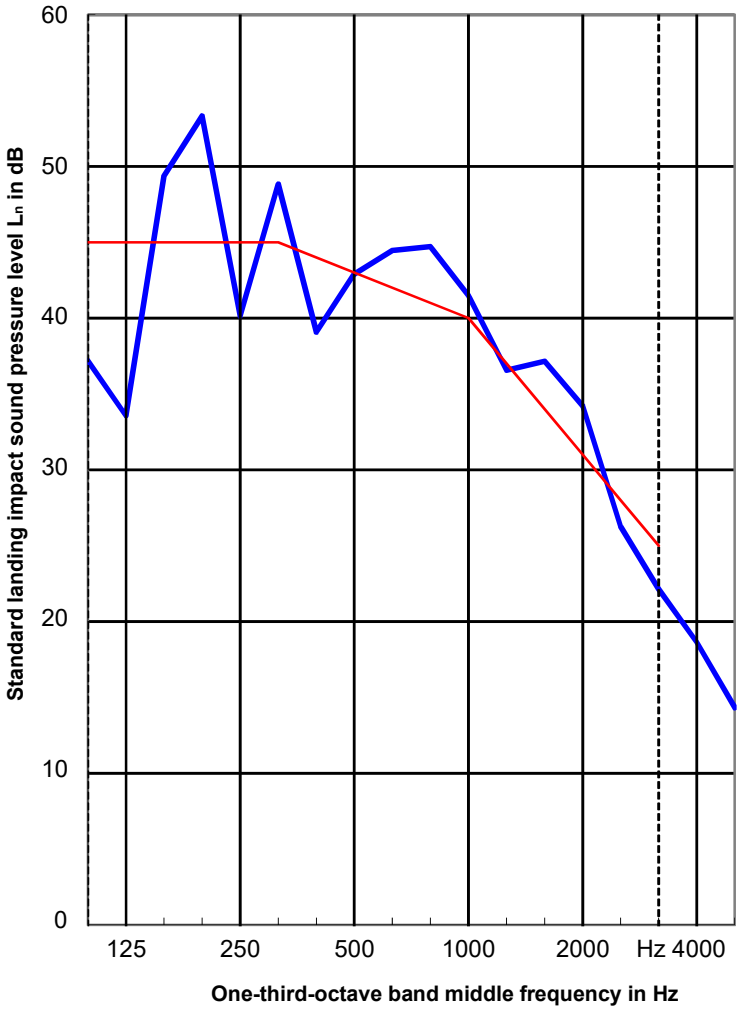
2500	26.3
3150	22.1
4000	18.6
5000	14.3



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
66.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

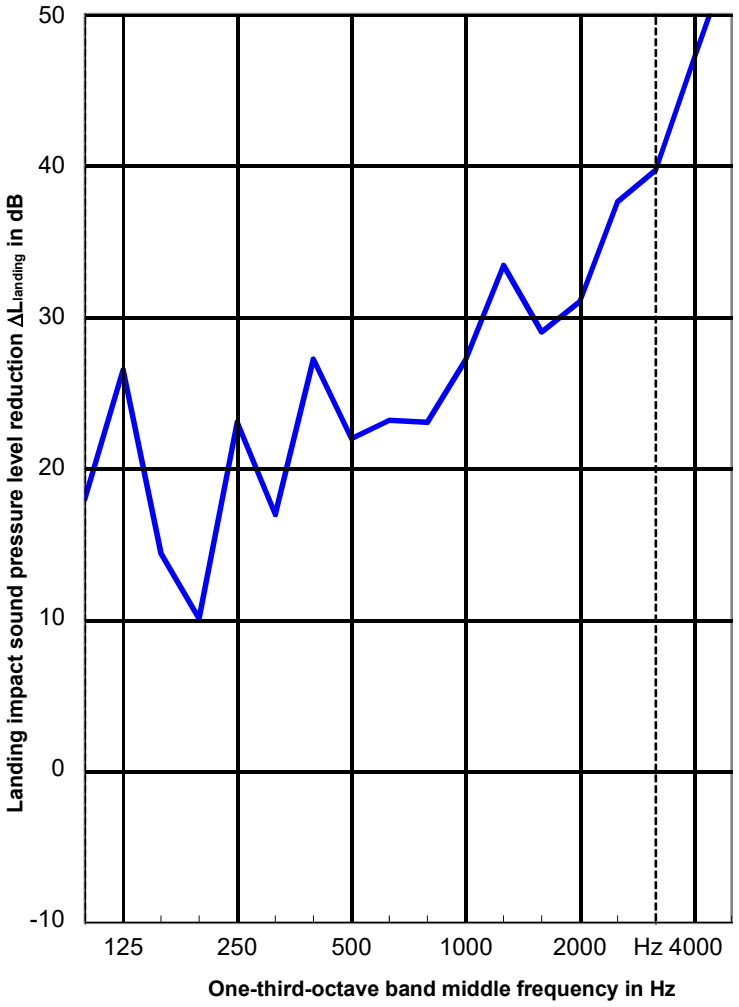
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 32%, air pressure: 966 hPa

$\Delta L_{W,landing}$ = 30 dB

$C_{I,\Delta,landing}$ = -10 dB

$\Delta L_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	18.0
125	60.8	26.5
160	60.9	14.4
200	63.0	10.1
250	62.8	23.0
315	65.7	16.9
400	65.8	1) 27.2
500	66.2	22.0
630	68.1	23.2
800	68.2	23.0
1000	68.9	27.1
1250	68.7	33.4
1600	68.2	29.0
2000	67.4	31.0
2500	65.8	37.6
3150	63.8	39.7
4000	65.1	47.0
5000	70.0	54.1



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
66.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

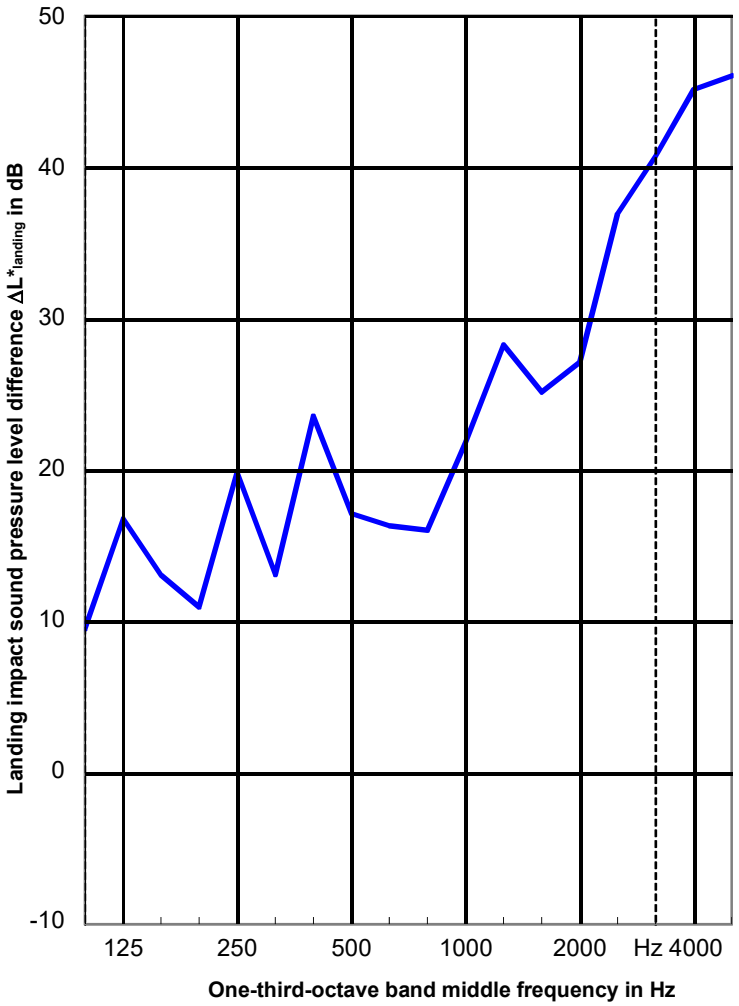
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 32%, air pressure: 966 hPa

$\Delta L^*_{W,landing}$ = 26 dB

$C^*_{I,\Delta,landing}$ = -9 dB

$\Delta L^*_{lin,landing}$ = 17 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	9.5
125	51.1	16.8
160	59.6	13.1
200	63.8	10.9
250	59.6	19.8
315	61.8	13.1
400	62.1	1) 23.6
500	61.3	17.1
630	61.2	16.3
800	61.2	16.0
1000	63.6	21.8
1250	63.6	28.3
1600	64.4	25.2
2000	63.5	27.1
2500	65.1	36.9
3150	64.9	40.7
4000	63.3	45.1
5000	61.9	46.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 1.5 cm
66.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and 38 cm stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

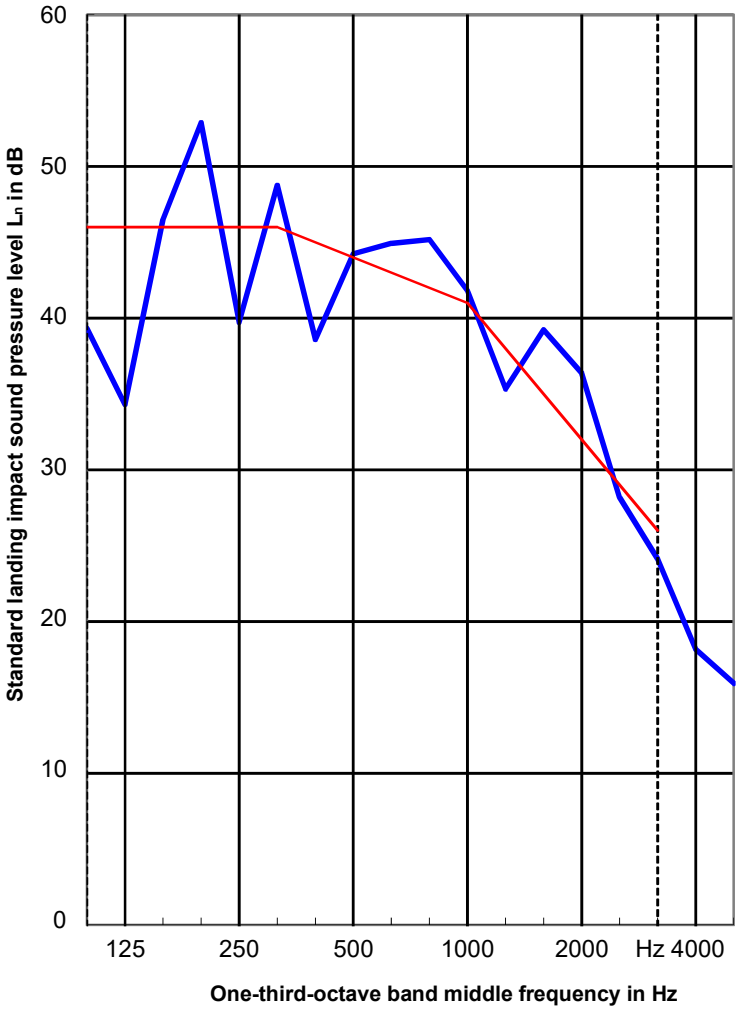
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 16/02/2021**
Temperature: 19.9 °C, relative humidity: 32%, air pressure: 966 hPa

$L_{n,w,landing}$ = 44 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 42 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	39.3
125	34.3
160	46.5
200	52.9
250	39.7
315	48.7
400	1) 38.6
500	44.2
630	44.9
800	45.2
1000	41.8
1250	35.3
1600	39.2
2000	36.4
2500	28.2
3150	24.1
4000	18.2
5000	15.9



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

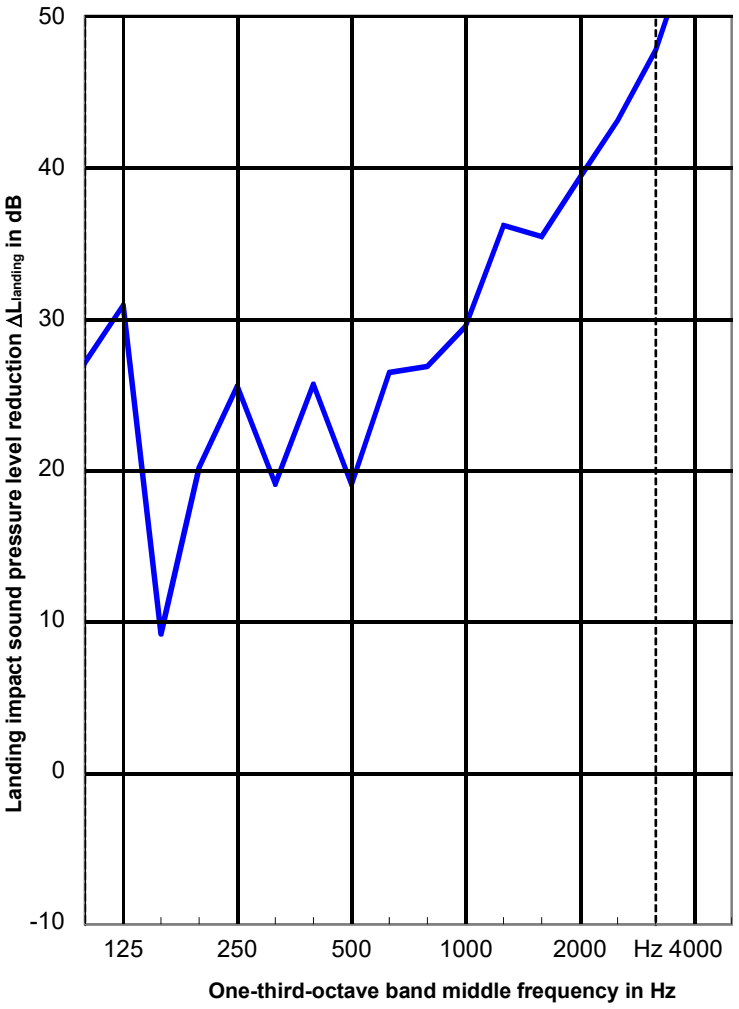
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$\Delta L_{W,landing}$ = 33 dB

$C_{I,\Delta,landing}$ = -12 dB

$\Delta L_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	27.1
125	60.8	1) 30.9
160	60.9	9.2
200	63.0	20.2
250	62.8	1) 25.5
315	65.7	19.1
400	65.8	1) 25.7
500	66.2	19.0
630	68.1	26.4
800	68.2	26.9
1000	68.9	29.5
1250	68.7	36.2
1600	68.2	35.4
2000	67.4	39.3
2500	65.8	1) 43.1
3150	63.8	1) 47.7
4000	65.1	1) 55.1
5000	70.0	< 1) 64.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

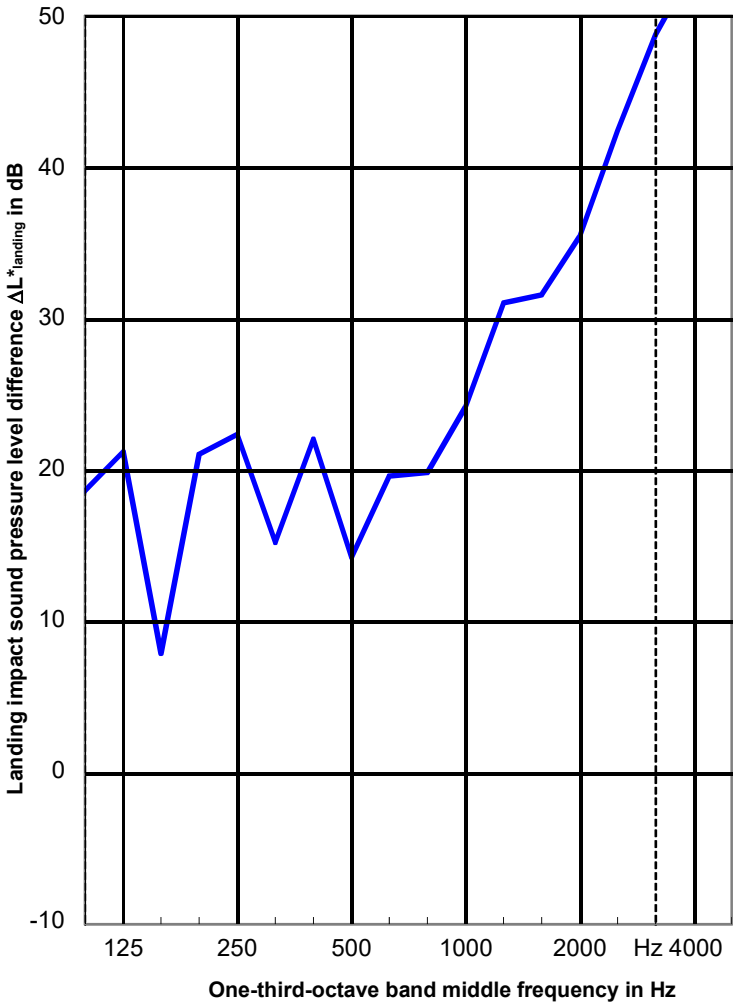
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$\Delta L^*_{W,landing}$ = 29 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 18 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	18.6
125	51.1	1) 21.2
160	59.6	7.9
200	63.8	21.0
250	59.6	1) 22.3
315	61.8	15.2
400	62.1	1) 22.0
500	61.3	14.2
630	61.2	19.6
800	61.2	19.8
1000	63.6	24.2
1250	63.6	31.0
1600	64.4	31.5
2000	63.5	35.4
2500	65.1	1) 42.4
3150	64.9	1) 48.8
4000	63.3	1) 53.3
5000	61.9	< 1) 56.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

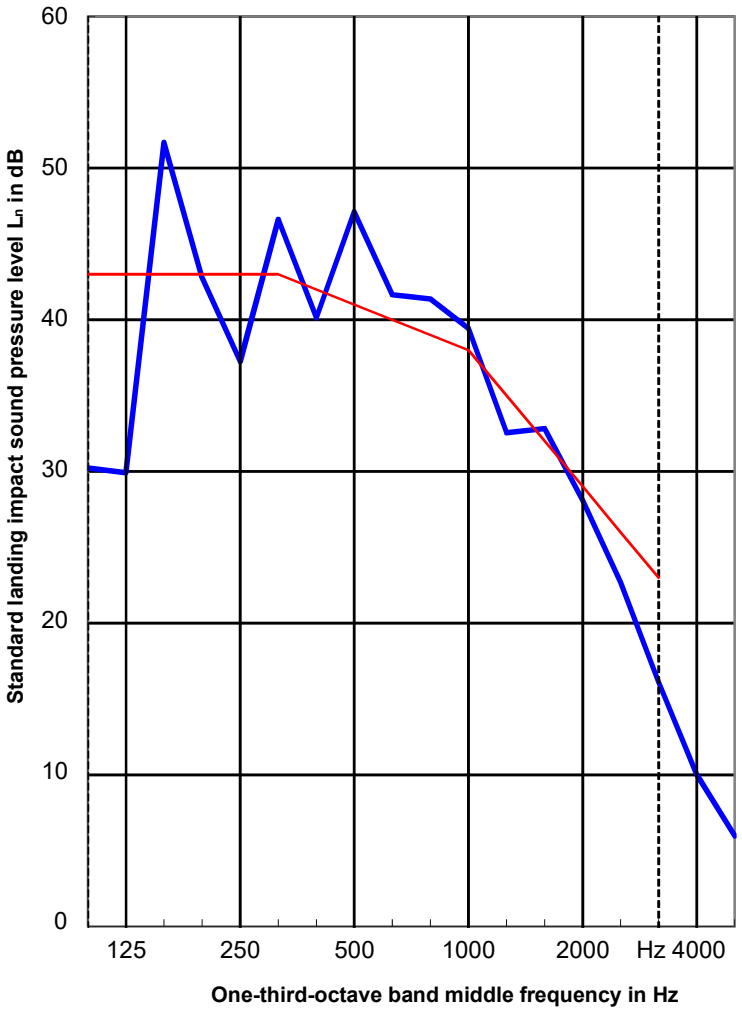
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$L_{n,w,landing}$ = 41 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 40 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	30.2
125	1) 29.9
160	51.7
200	42.8
250	1) 37.3
315	46.6
400	1) 40.1
500	47.1
630	41.6
800	41.4
1000	39.4
1250	32.5
1600	32.8
2000	28.1
2500	1) 22.7
3150	1) 16.1
4000	1) 10.0
5000	<1) 6.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
22 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

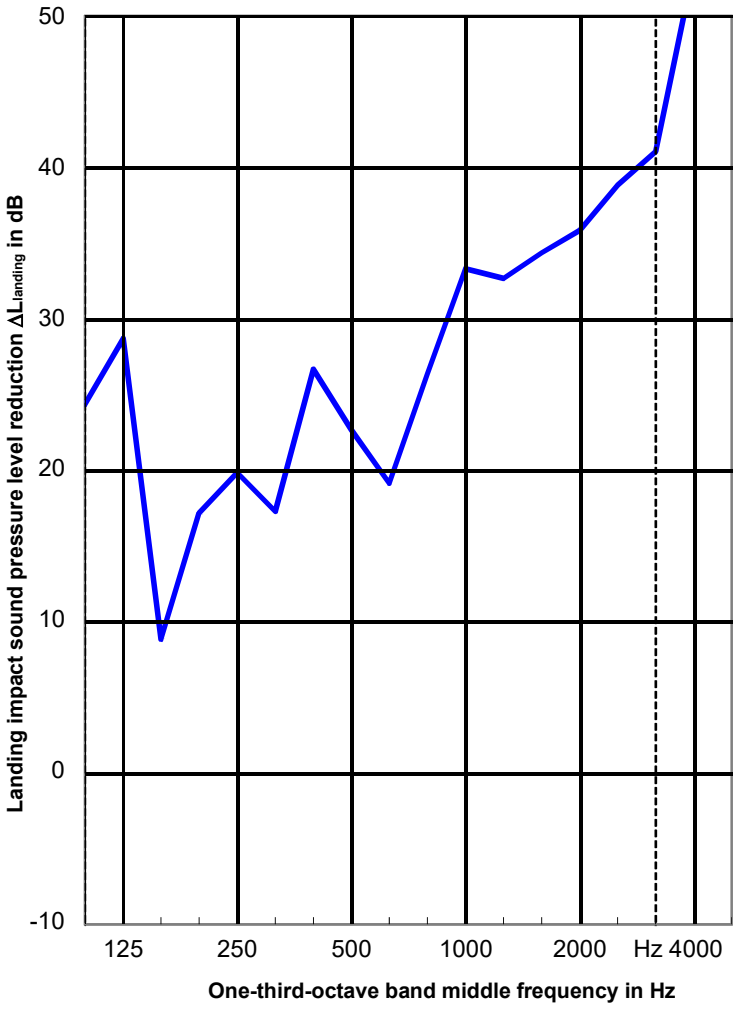
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$\Delta L_{W,landing}$ = 31 dB

$C_{I,\Delta,landing}$ = -11 dB

$\Delta L_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	24.3
125	60.8	28.7
160	60.9	8.8
200	63.0	17.2
250	62.8	19.8
315	65.7	17.3
400	65.8	1) 26.6
500	66.2	22.6
630	68.1	19.1
800	68.2	26.4
1000	68.9	33.3
1250	68.7	32.6
1600	68.2	34.3
2000	67.4	35.8
2500	65.8	38.8
3150	63.8	41.0
4000	65.1	1) 53.2
5000	70.0	< 1) 62.9



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
22 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

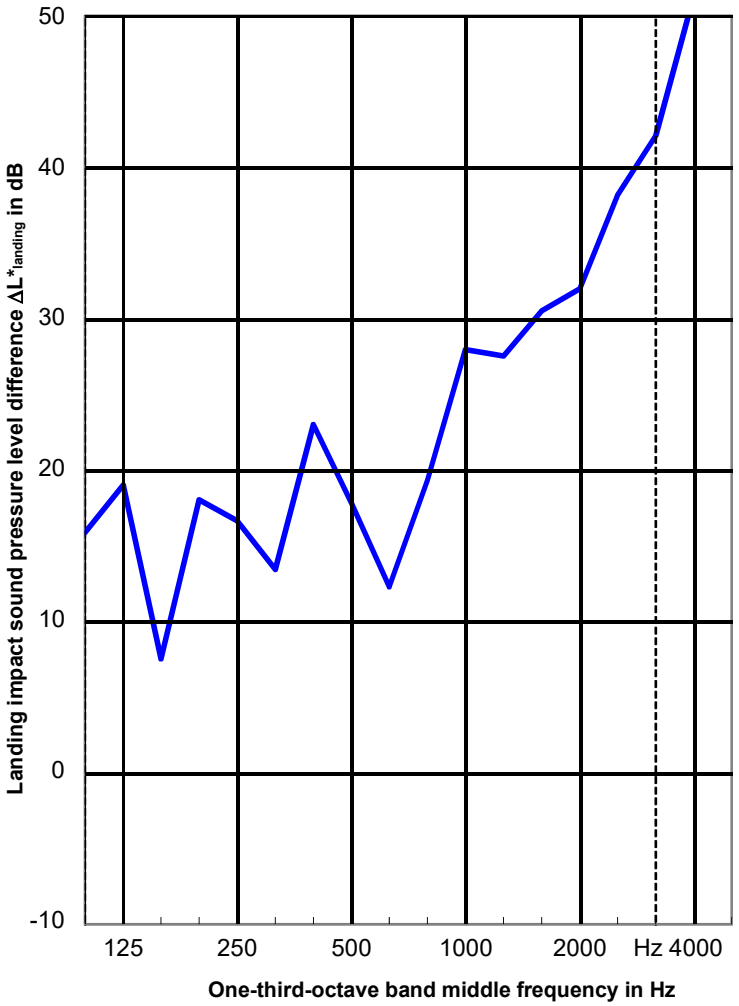
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$\Delta L^*_{W,landing}$ = 27 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 17 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	15.9
125	51.1	19.0
160	59.6	7.5
200	63.8	18.0
250	59.6	16.6
315	61.8	13.4
400	62.1	1) 23.0
500	61.3	17.8
630	61.2	12.3
800	61.2	19.3
1000	63.6	28.0
1250	63.6	27.5
1600	64.4	30.5
2000	63.5	31.9
2500	65.1	38.1
3150	64.9	42.0
4000	63.3	1) 51.3
5000	61.9	< 1) 54.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
22 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

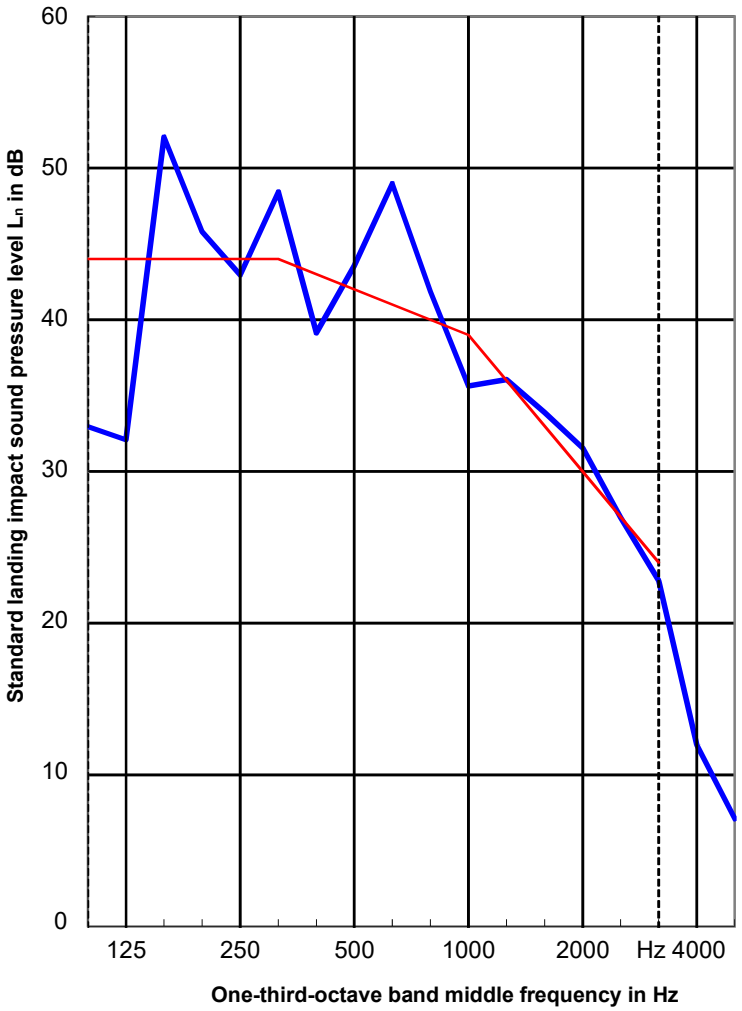
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$L_{n,w,landing}$ = 42 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 41 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	33.0
125	32.1
160	52.0
200	45.8
250	43.0
315	48.4
400	1) 39.1
500	43.5
630	49.0
800	41.9
1000	35.6
1250	36.0
1600	33.9
2000	31.5
2500	27.0
3150	22.8
4000	1) 12.0
5000	<1) 7.1



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
44.7 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

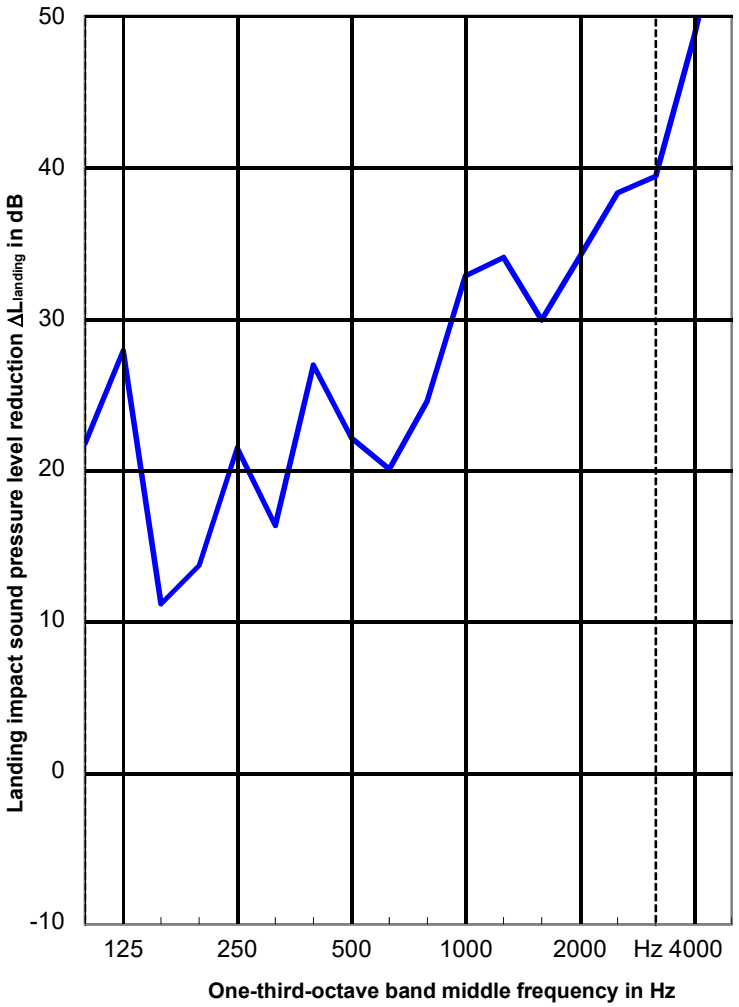
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$\Delta L_{W,landing}$ = 30 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.8
125	60.8	27.9
160	60.9	11.2
200	63.0	13.7
250	62.8	21.5
315	65.7	16.3
400	65.8	1) 26.9
500	66.2	22.1
630	68.1	20.1
800	68.2	24.6
1000	68.9	32.8
1250	68.7	34.0
1600	68.2	29.9
2000	67.4	34.1
2500	65.8	38.3
3150	63.8	39.4
4000	65.1	48.5
5000	70.0	59.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
44.7 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-related mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

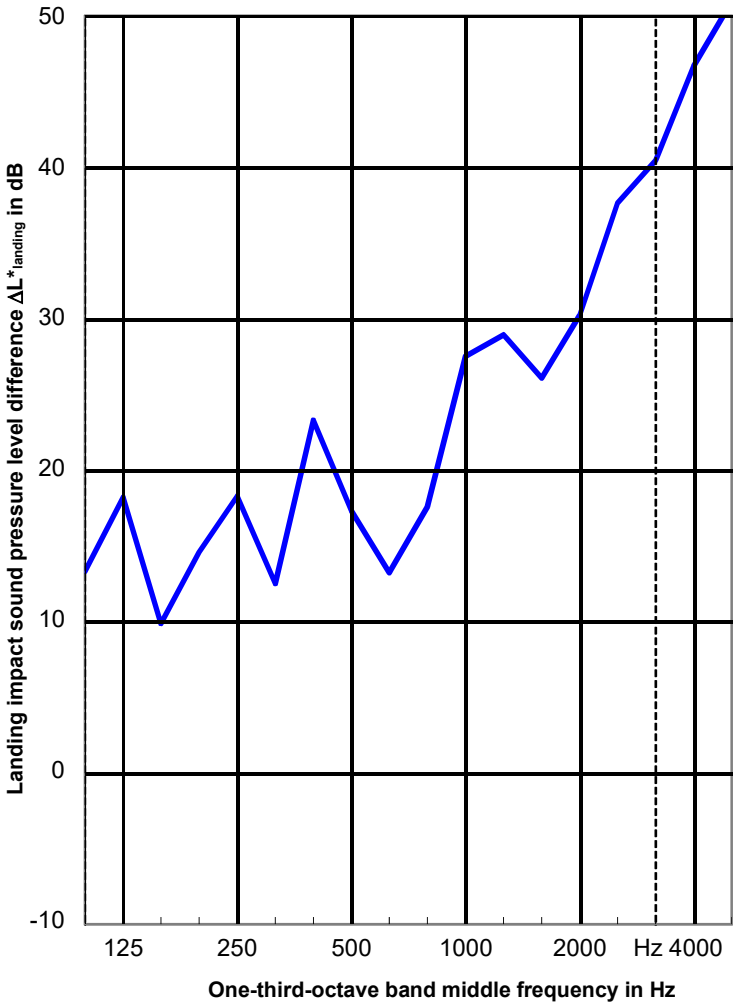
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$\Delta L^*_{W,landing}$ = 26 dB

$C^*_{I,\Delta,landing}$ = -9 dB

$\Delta L^*_{lin,landing}$ = 17 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	13.3
125	51.1	18.2
160	59.6	9.9
200	63.8	14.6
250	59.6	18.3
315	61.8	12.5
400	62.1	1) 23.3
500	61.3	17.3
630	61.2	13.2
800	61.2	17.6
1000	63.6	27.5
1250	63.6	28.9
1600	64.4	26.1
2000	63.5	30.2
2500	65.1	37.6
3150	64.9	40.4
4000	63.3	46.7
5000	61.9	51.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
44.7 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

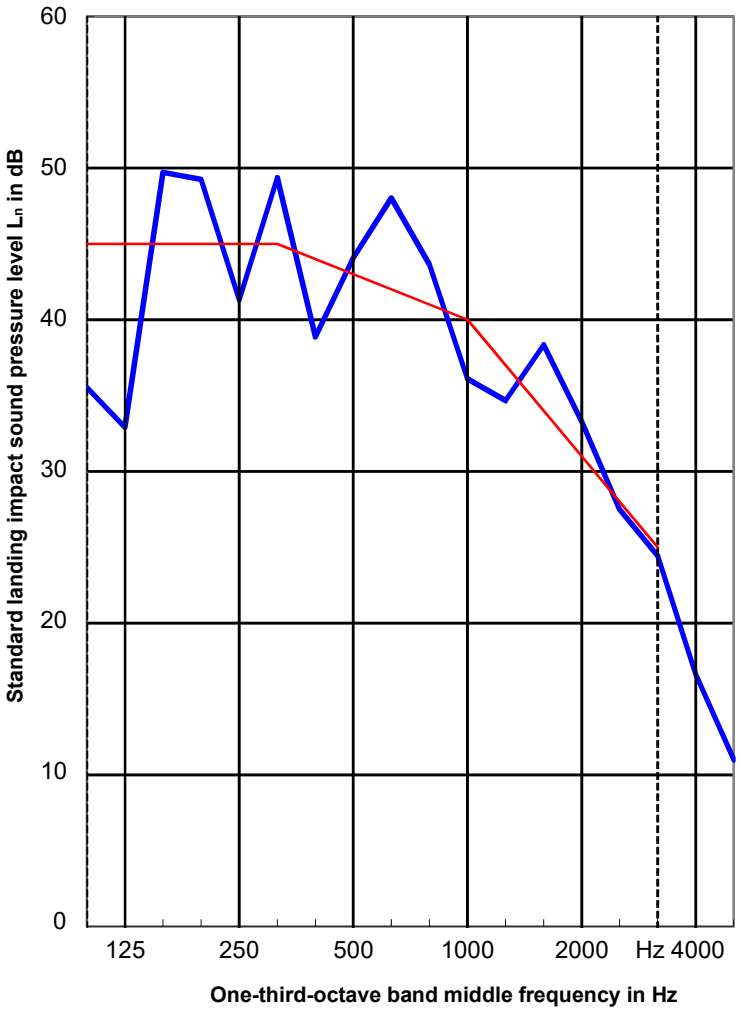
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$L_{n,w,landing}$ = 43 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 41 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	35.5
125	32.9
160	49.7
200	49.3
250	41.3
315	49.4
400	1) 38.9
500	44.1
630	48.0
800	43.6
1000	36.1
1250	34.7
1600	38.3
2000	33.3
2500	27.5
3150	24.4
4000	16.6
5000	11.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
67.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

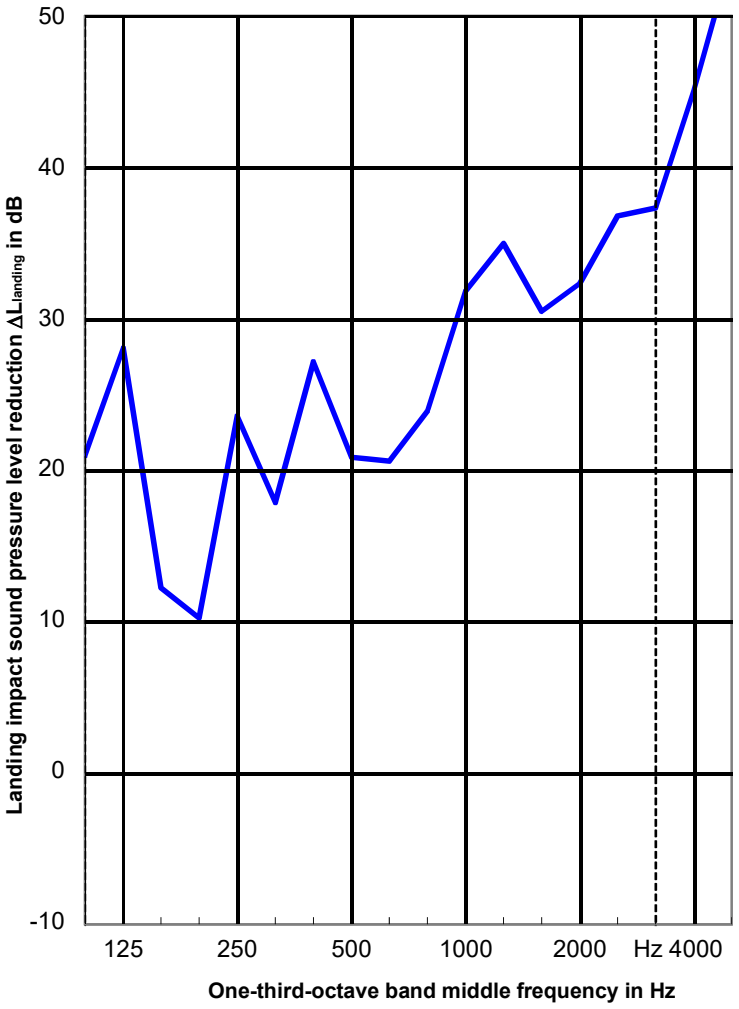
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$\Delta L_{W,landing}$ = 29 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.0
125	60.8	28.0
160	60.9	12.2
200	63.0	10.2
250	62.8	23.6
315	65.7	17.9
400	65.8	1) 27.1
500	66.2	20.8
630	68.1	20.6
800	68.2	23.9
1000	68.9	31.8
1250	68.7	35.0
1600	68.2	30.5
2000	67.4	32.3
2500	65.8	36.8
3150	63.8	37.3
4000	65.1	45.0
5000	70.0	54.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
67.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and 38 cm stair landing centre line

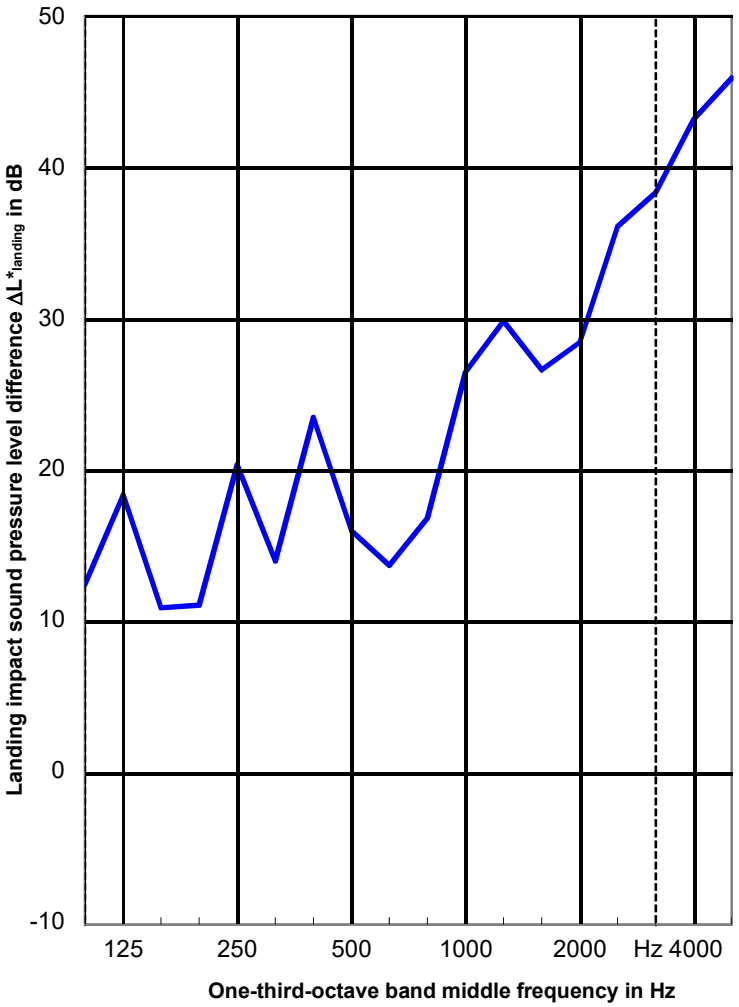
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$\Delta L^*_{W,landing}$ = 26 dB

$C^*_{I,\Delta,landing}$ = -9 dB

$\Delta L^*_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	12.5
125	51.1	18.4
160	59.6	10.9
200	63.8	11.1
250	59.6	20.4
315	61.8	14.0
400	62.1	1) 23.5
500	61.3	16.0
630	61.2	13.7
800	61.2	16.8
1000	63.6	26.5
1250	63.6	29.8
1600	64.4	26.6
2000	63.5	28.5
2500	65.1	36.1
3150	64.9	38.3
4000	63.3	43.2
5000	61.9	45.9



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 5 cm
67.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and 38 cm stair landing centre line

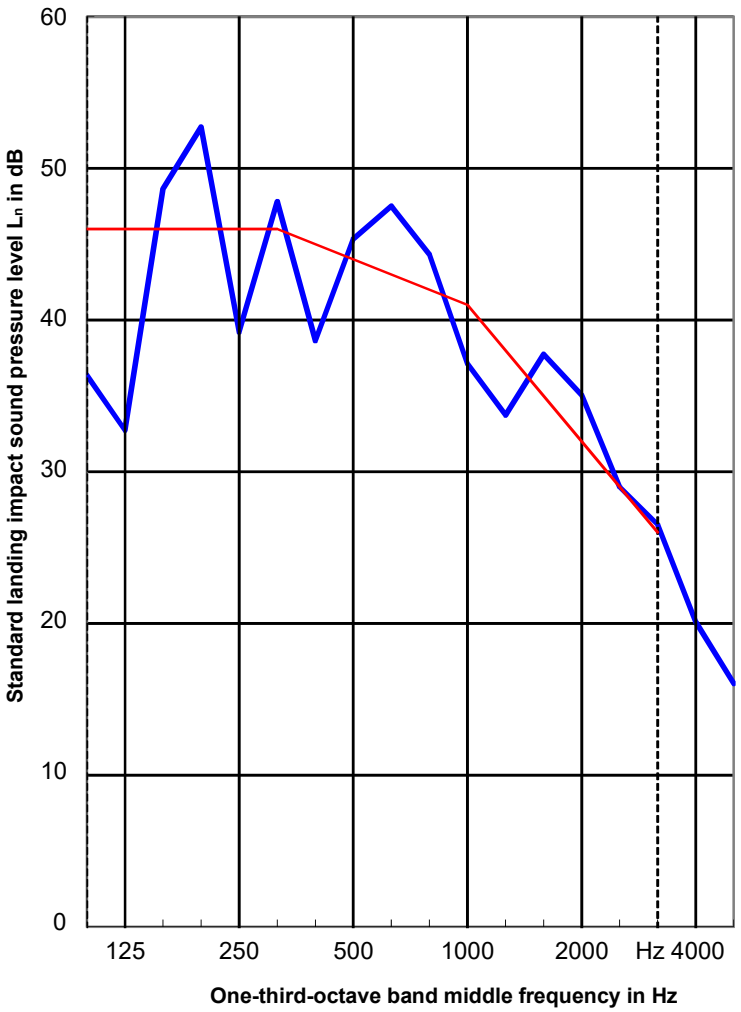
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/02/2021**
Temperature: 20 °C, relative humidity: 38%, air pressure: 962 hPa

$L_{n,w,landing}$ = 44 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 42 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	36.4
125	32.7
160	48.7
200	52.7
250	39.2
315	47.8
400	1) 38.7
500	45.3
630	47.5
800	44.3
1000	37.1
1250	33.7
1600	37.7
2000	35.0
2500	29.0
3150	26.5
4000	20.1
5000	16.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

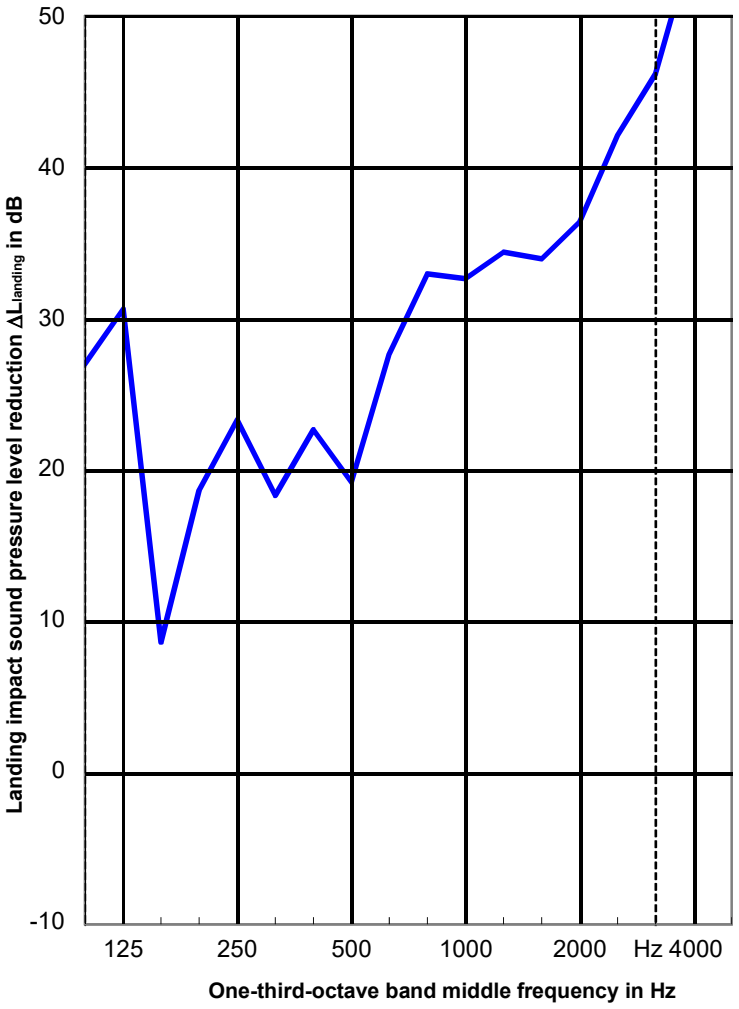
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 33 dB

$C_{I,\Delta,landing}$ = -12 dB

$\Delta L_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	1) 27.0
125	60.8	1) 30.6
160	60.9	8.6
200	63.0	18.7
250	62.8	23.3
315	65.7	18.3
400	65.8	22.7
500	66.2	19.2
630	68.1	27.7
800	68.2	32.9
1000	68.9	32.6
1250	68.7	34.4
1600	68.2	33.9
2000	67.4	36.4
2500	65.8	42.1
3150	63.8	1) 46.2
4000	65.1	1) 55.0
5000	70.0	< 1) 63.1



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

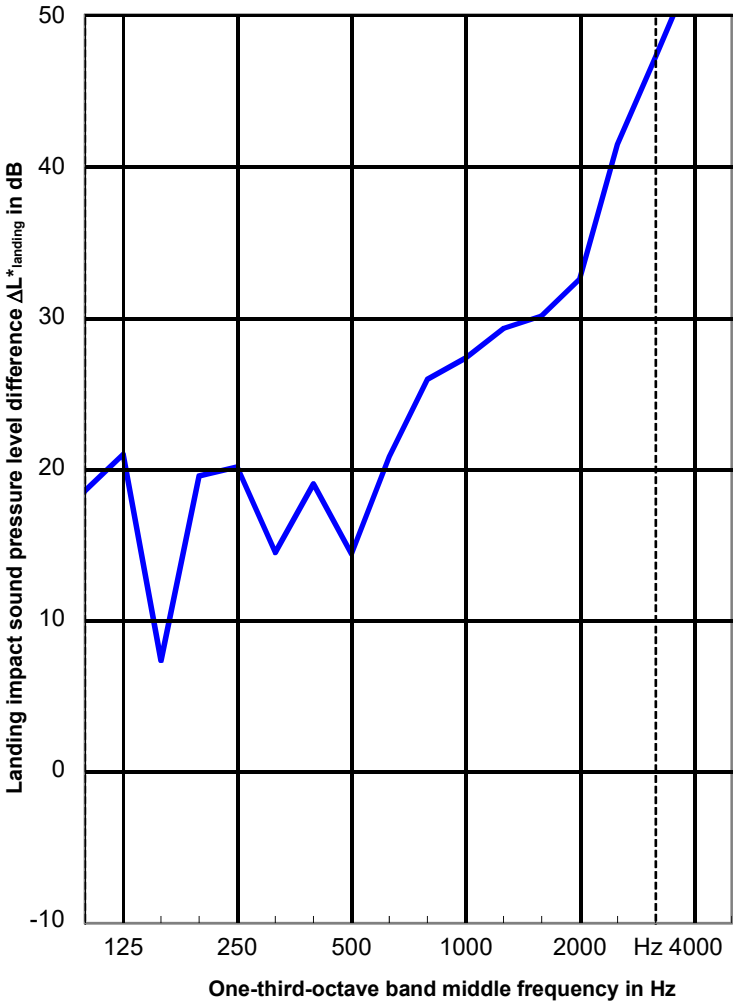
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 29 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 18 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	1) 18.5
125	51.1	1) 20.9
160	59.6	7.3
200	63.8	19.5
250	59.6	20.1
315	61.8	14.5
400	62.1	19.0
500	61.3	14.4
630	61.2	20.8
800	61.2	25.9
1000	63.6	27.3
1250	63.6	29.3
1600	64.4	30.1
2000	63.5	32.5
2500	65.1	41.4
3150	64.9	1) 47.2
4000	63.3	1) 53.1
5000	61.9	< 1) 55.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

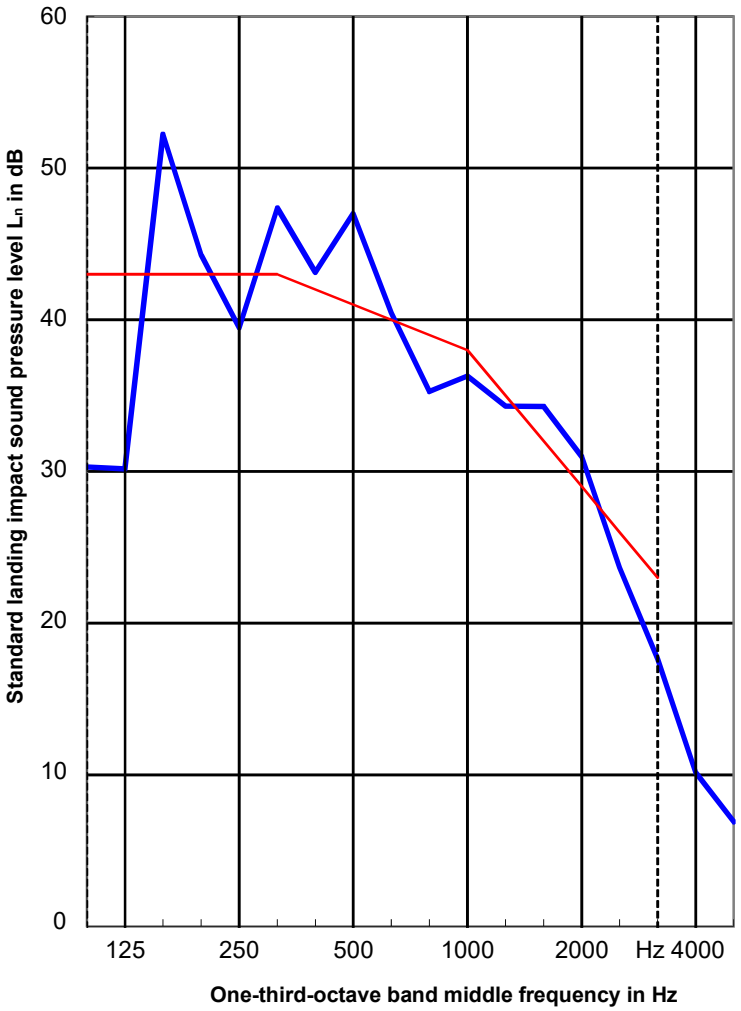
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$L_{n,w,landing}$ = 41 dB

$C_{I,landing}$ = 0 dB

$L_{n,w,landing} + C_{I,landing}$ = 41 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	1) 30.3
125	1) 30.2
160	52.2
200	44.3
250	39.5
315	47.4
400	43.1
500	47.0
630	40.4
800	35.3
1000	36.3
1250	34.3
1600	34.3
2000	31.0
2500	23.7
3150	1) 17.6
4000	1) 10.1
5000	< 1) 6.9



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
22.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

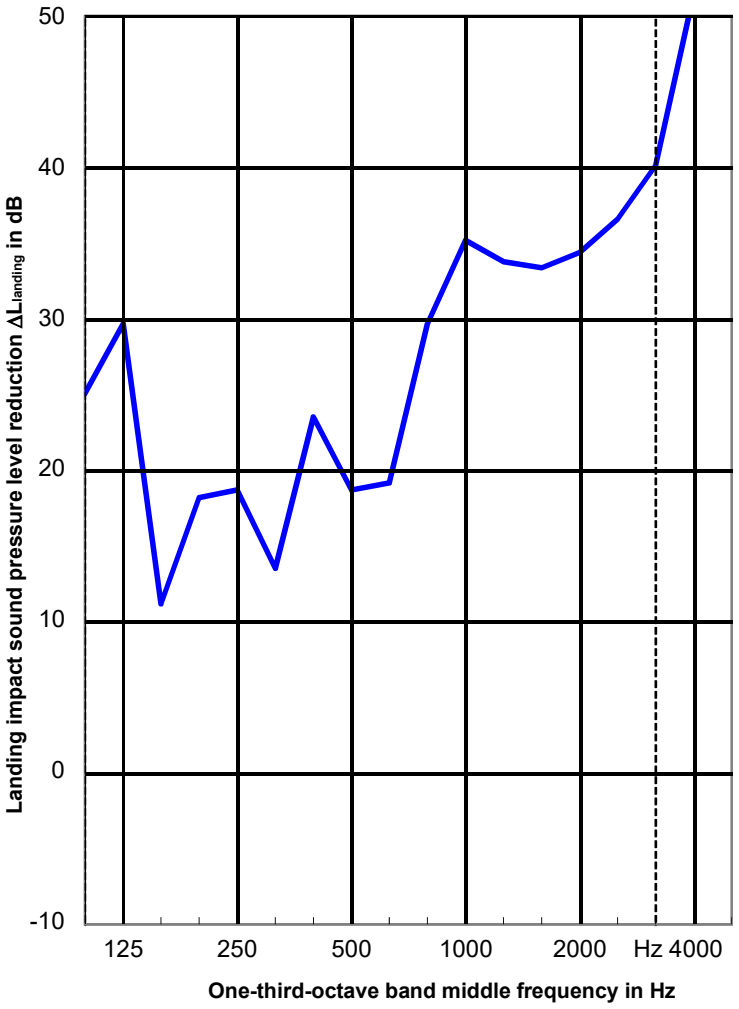
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 30 dB

$C_{I,\Delta,landing}$ = -10 dB

$\Delta L_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	25.1
125	60.8	1) 29.7
160	60.9	11.2
200	63.0	18.2
250	62.8	18.7
315	65.7	13.5
400	65.8	23.5
500	66.2	18.7
630	68.1	19.1
800	68.2	29.7
1000	68.9	35.2
1250	68.7	33.8
1600	68.2	33.4
2000	67.4	34.4
2500	65.8	36.6
3150	63.8	40.1
4000	65.1	1) 51.5
5000	70.0	< 1) 62.7



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
22.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

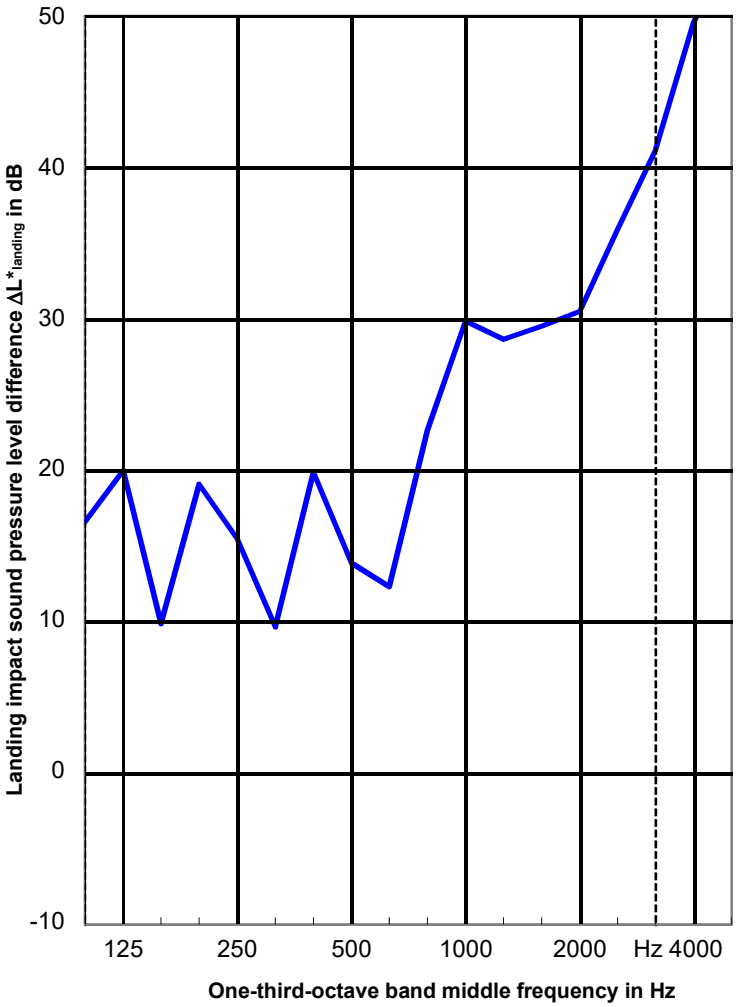
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 27 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 17 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	16.6
125	51.1	1) 20.0
160	59.6	9.9
200	63.8	19.1
250	59.6	15.5
315	61.8	9.7
400	62.1	19.9
500	61.3	13.9
630	61.2	12.3
800	61.2	22.6
1000	63.6	29.8
1250	63.6	28.6
1600	64.4	29.5
2000	63.5	30.5
2500	65.1	35.9
3150	64.9	41.2
4000	63.3	1) 49.6
5000	61.9	< 1) 54.6



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
22.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

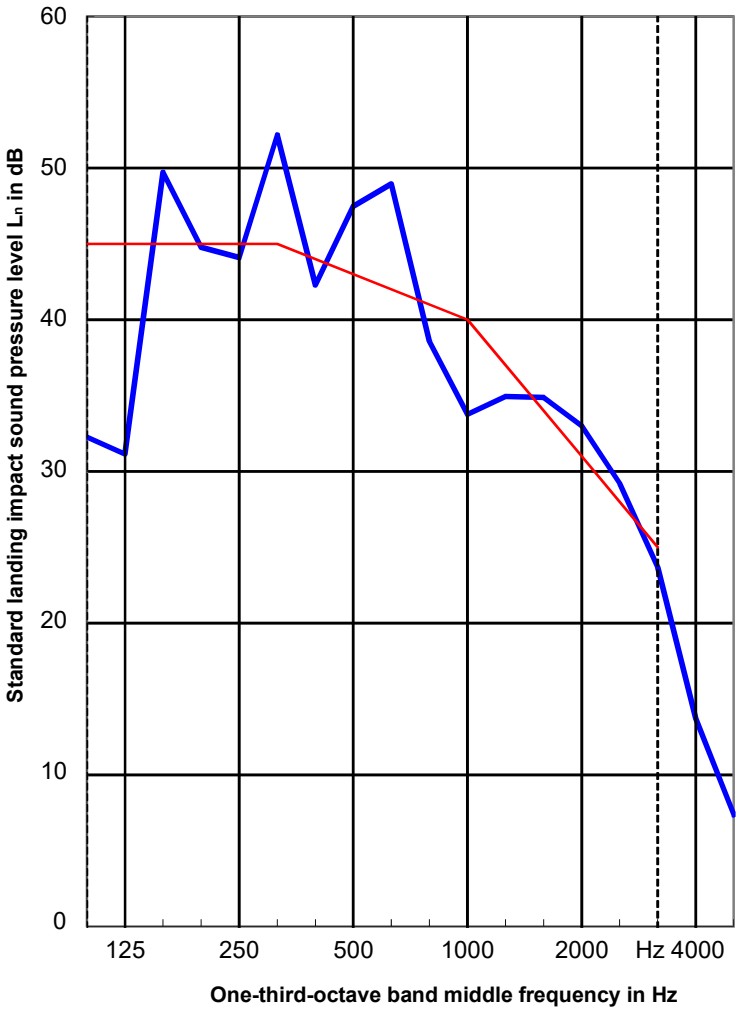
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$L_{n,w,landing}$ = 43 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 42 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	32.3
125	1) 31.1
160	49.7
200	44.8
250	44.1
315	52.2
400	42.3
500	47.5
630	48.9
800	38.6
1000	33.8
1250	34.9
1600	34.9
2000	33.0
2500	29.2
3150	23.7
4000	1) 13.7
5000	< 1) 7.4



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
45.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

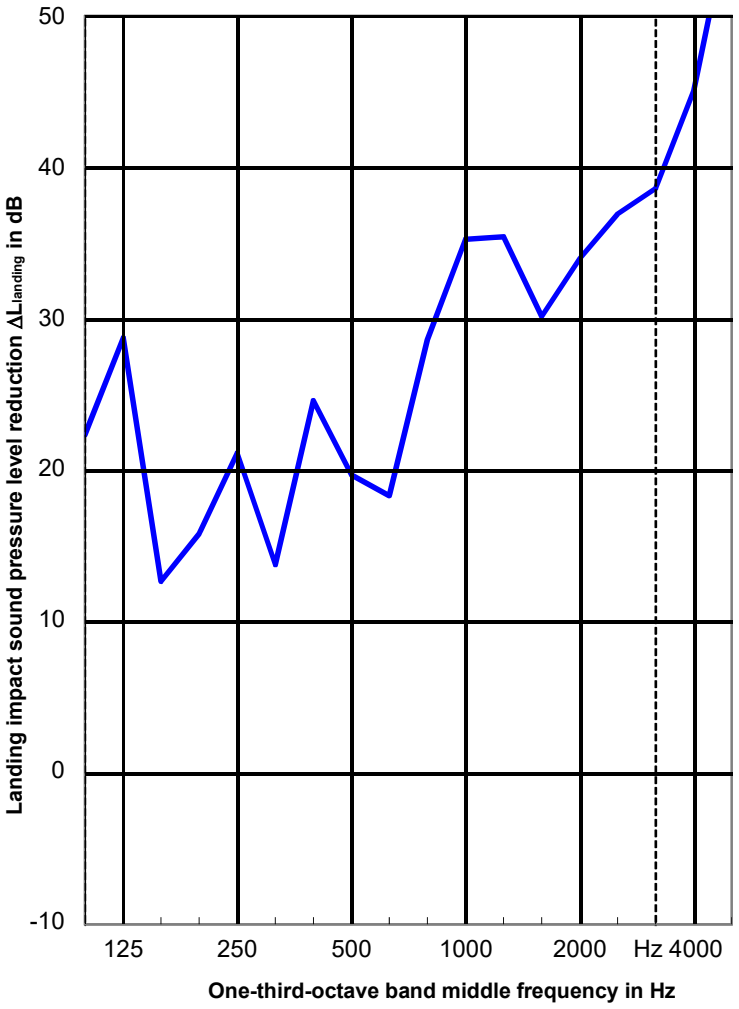
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 29 dB

$C_{I,\Delta,landing}$ = -8 dB

$\Delta L_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	22.3
125	60.8	28.7
160	60.9	12.7
200	63.0	15.8
250	62.8	21.1
315	65.7	13.8
400	65.8	24.6
500	66.2	19.7
630	68.1	18.3
800	68.2	28.6
1000	68.9	35.2
1250	68.7	35.4
1600	68.2	30.1
2000	67.4	34.0
2500	65.8	36.9
3150	63.8	38.6
4000	65.1	45.0
5000	70.0	57.2



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
45.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

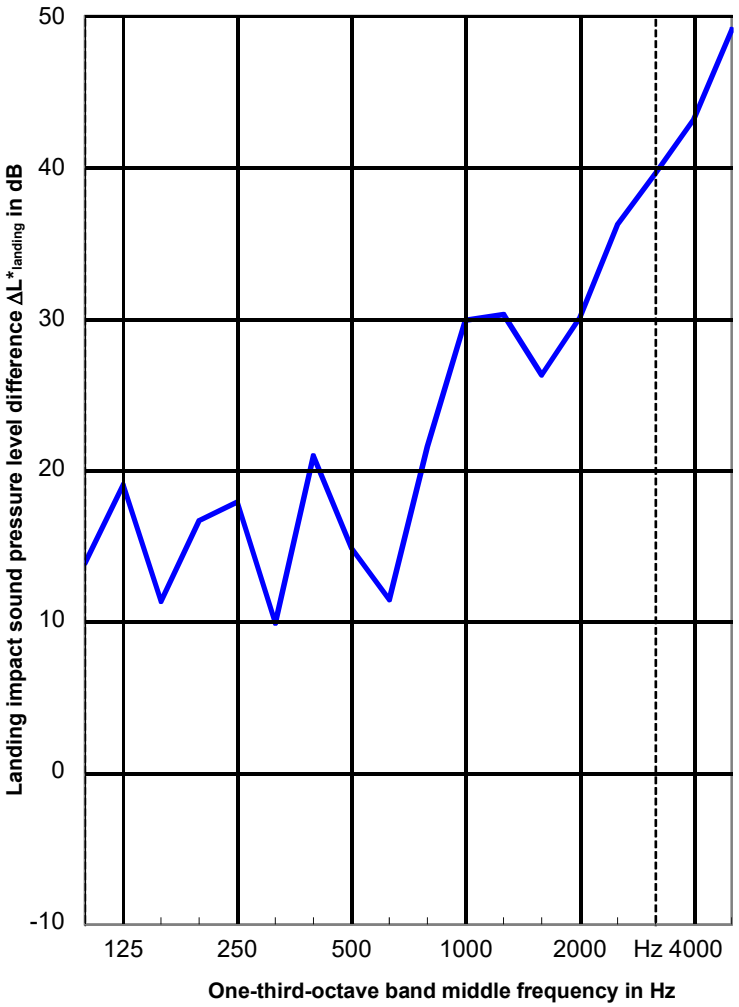
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 27 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 17 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	13.9
125	51.1	19.0
160	59.6	11.4
200	63.8	16.7
250	59.6	17.9
315	61.8	9.9
400	62.1	20.9
500	61.3	14.9
630	61.2	11.4
800	61.2	21.6
1000	63.6	29.9
1250	63.6	30.3
1600	64.4	26.3
2000	63.5	30.1
2500	65.1	36.2
3150	64.9	39.6
4000	63.3	43.2
5000	61.9	49.1



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
45.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

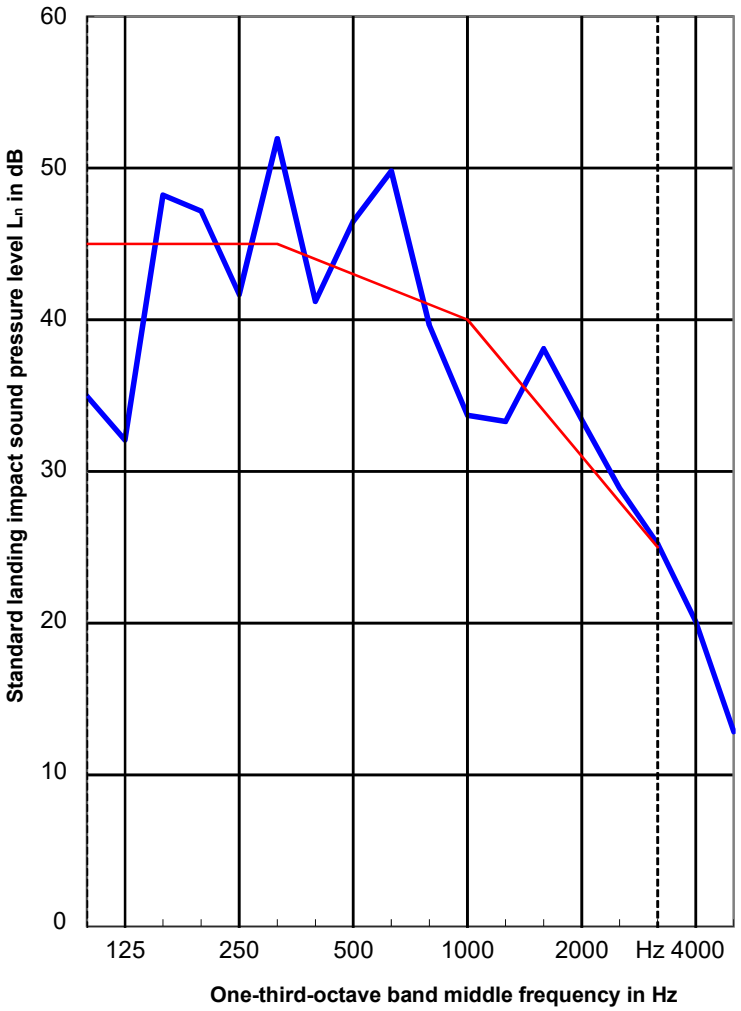
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$L_{n,w,landing}$ = 43 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 42 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	35.0
125	32.1
160	48.2
200	47.2
250	41.7
315	51.9
400	41.2
500	46.5
630	49.8
800	39.6
1000	33.7
1250	33.3
1600	38.1
2000	33.4
2500	28.9
3150	25.2
4000	20.1
5000	12.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
68.5 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

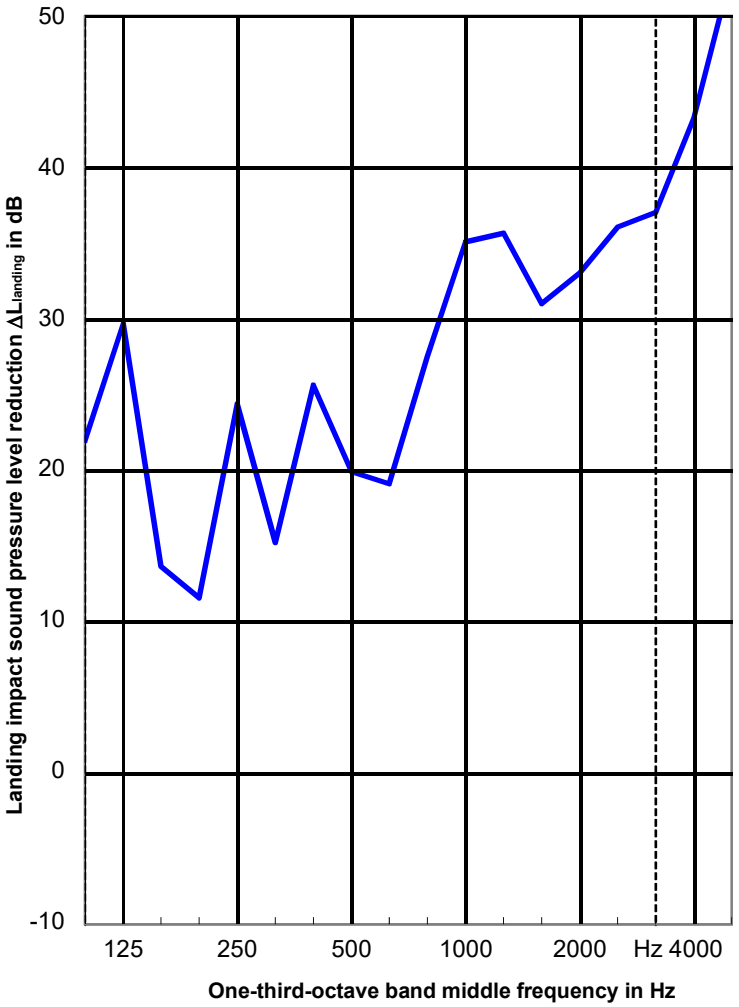
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 29 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.9
125	60.8	1) 29.7
160	60.9	13.6
200	63.0	11.6
250	62.8	24.3
315	65.7	15.2
400	65.8	25.6
500	66.2	19.9
630	68.1	19.1
800	68.2	27.5
1000	68.9	35.1
1250	68.7	35.6
1600	68.2	31.0
2000	67.4	33.0
2500	65.8	36.0
3150	63.8	37.0
4000	65.1	43.2
5000	70.0	53.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
68.5 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

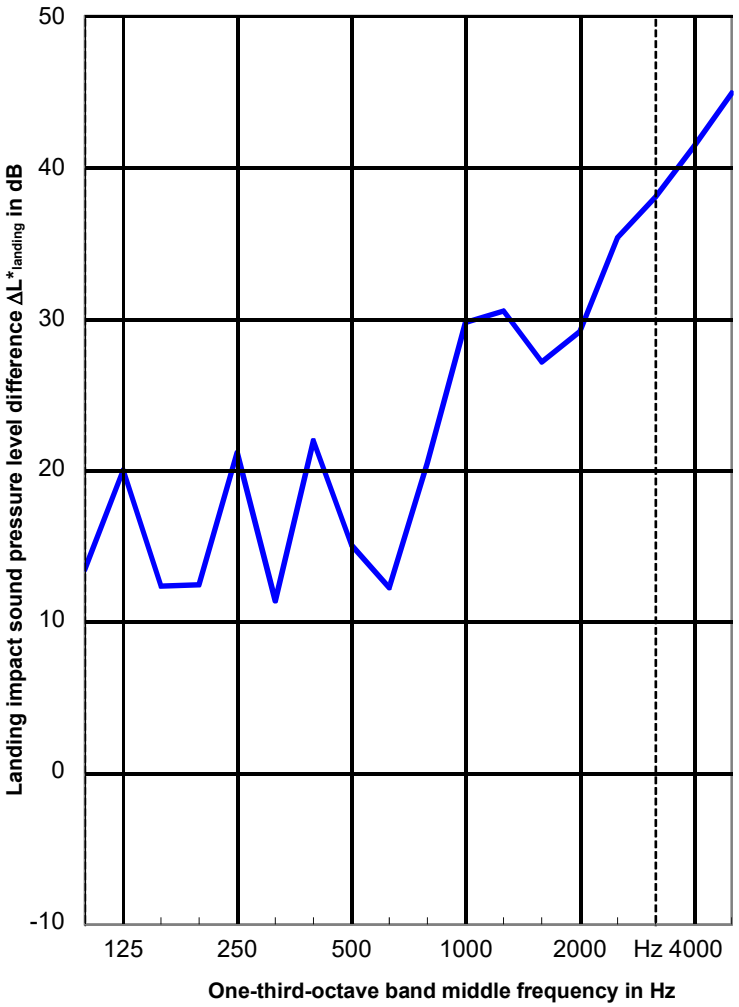
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 26 dB

$C^*_{I,\Delta,landing}$ = -9 dB

$\Delta L^*_{lin,landing}$ = 17 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	13.5
125	51.1	1) 20.0
160	59.6	12.3
200	63.8	12.4
250	59.6	21.1
315	61.8	11.4
400	62.1	21.9
500	61.3	15.1
630	61.2	12.2
800	61.2	20.4
1000	63.6	29.7
1250	63.6	30.5
1600	64.4	27.1
2000	63.5	29.1
2500	65.1	35.4
3150	64.9	38.0
4000	63.3	41.4
5000	61.9	44.9



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPX with 15mm elastomer bearing, tested with gap spacing z = 10 cm
68.5 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

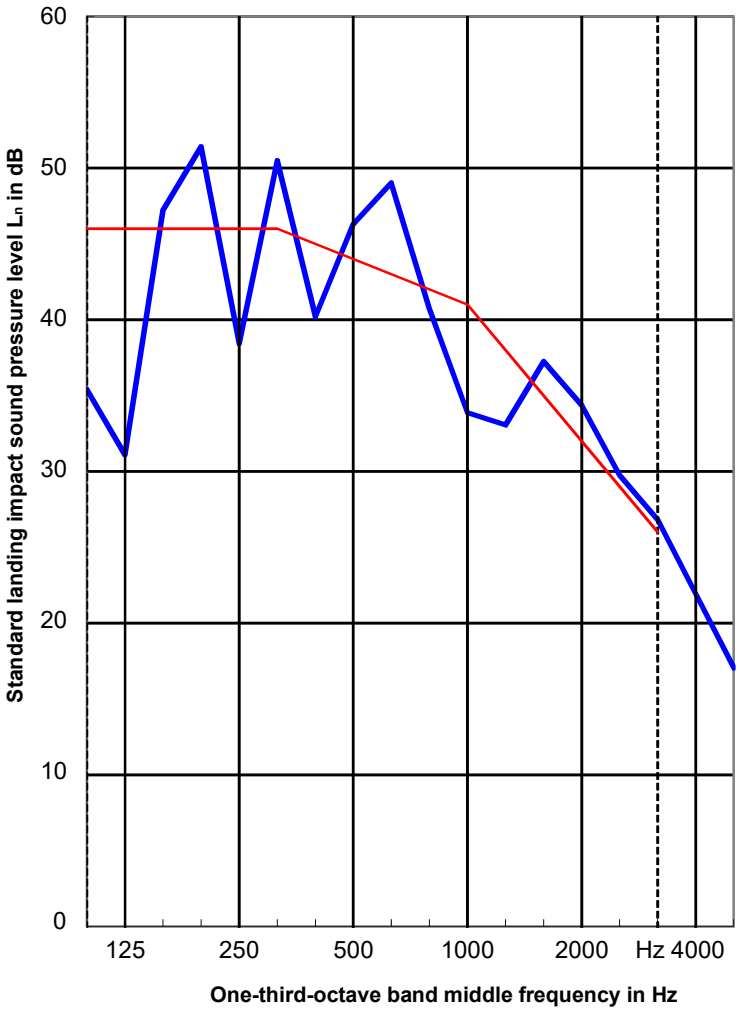
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/02/2021**
Temperature: 20.2 °C, relative humidity: 42%, air pressure: 968 hPa

$L_{n,w,landing}$ = 44 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 42 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	35.4
125	1) 31.1
160	47.2
200	51.4
250	38.4
315	50.5
400	40.2
500	46.3
630	49.0
800	40.7
1000	33.9
1250	33.1
1600	37.2
2000	34.3
2500	29.7
3150	26.8
4000	21.9
5000	17.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

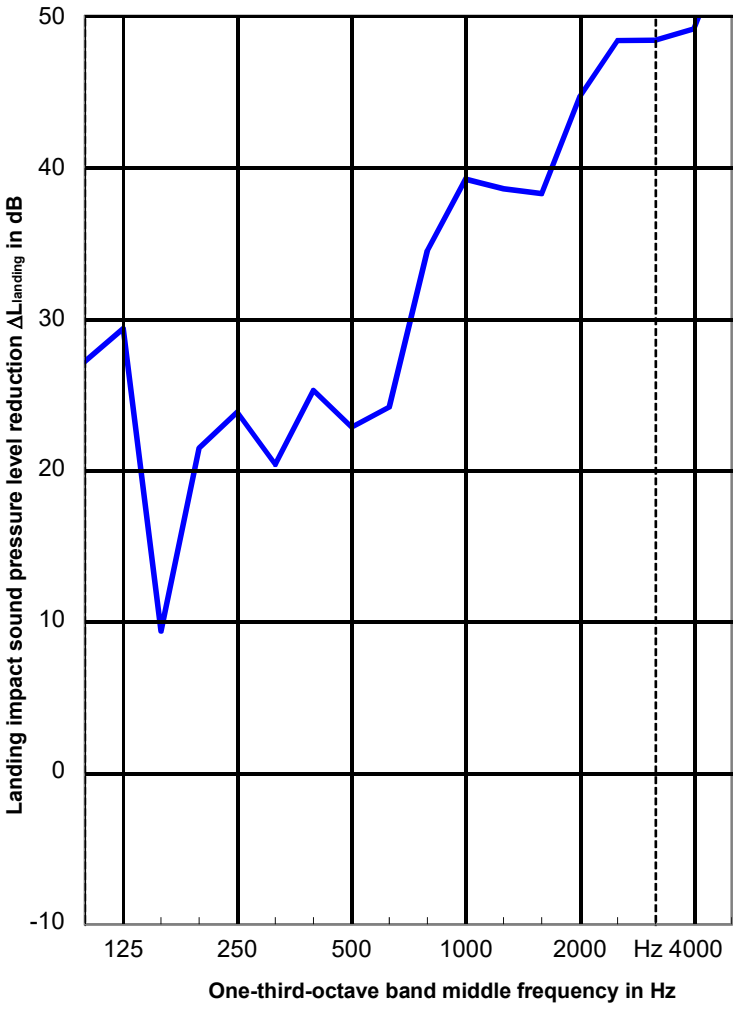
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 35 dB

$C_{I,\Delta,landing}$ = -13 dB

$\Delta L_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	27.2
125	60.8	29.3
160	60.9	9.4
200	63.0	21.5
250	62.8	23.8
315	65.7	20.4
400	65.8	25.2
500	66.2	22.8
630	68.1	24.2
800	68.2	1) 34.5
1000	68.9	1) 39.2
1250	68.7	1) 38.6
1600	68.2	1) 38.3
2000	67.4	1) 44.7
2500	65.8	1) 48.4
3150	63.8	1) 48.4
4000	65.1	1) 49.1
5000	70.0	55.5



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

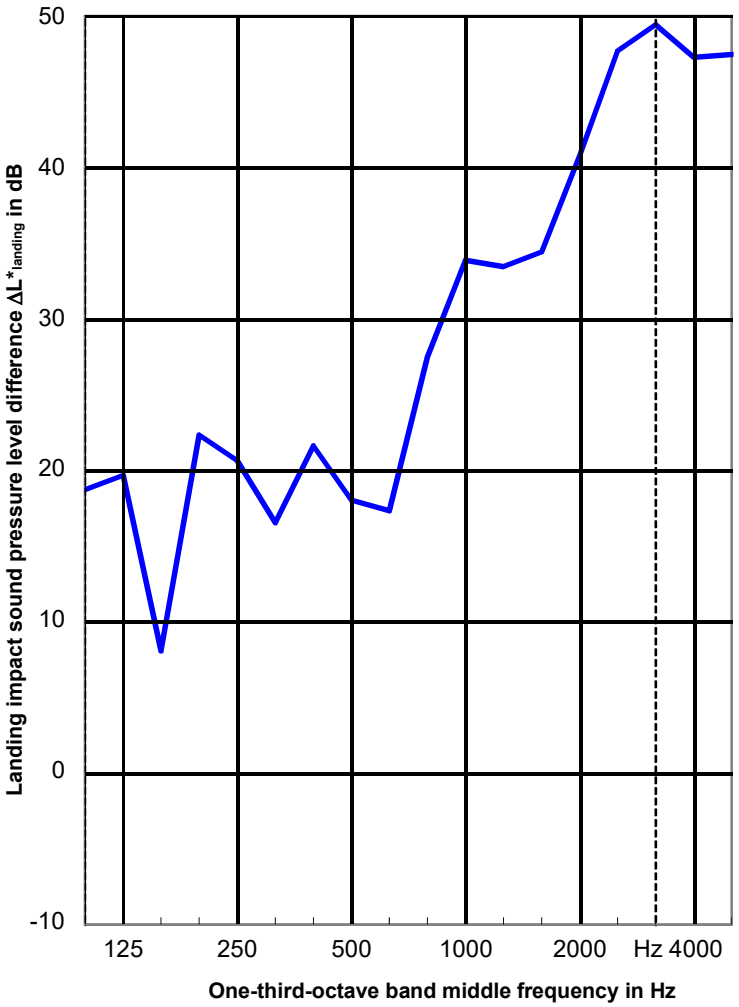
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 31 dB

$C^*_{I,\Delta,landing}$ = -12 dB

$\Delta L^*_{lin,landing}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	18.7
125	51.1	19.7
160	59.6	8.1
200	63.8	22.3
250	59.6	20.6
315	61.8	16.5
400	62.1	21.6
500	61.3	18.0
630	61.2	17.3
800	61.2	1) 27.5
1000	63.6	1) 33.9
1250	63.6	1) 33.4
1600	64.4	1) 34.4
2000	63.5	1) 40.8
2500	65.1	1) 47.7
3150	64.9	1) 49.4
4000	63.3	1) 47.3
5000	61.9	47.4



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

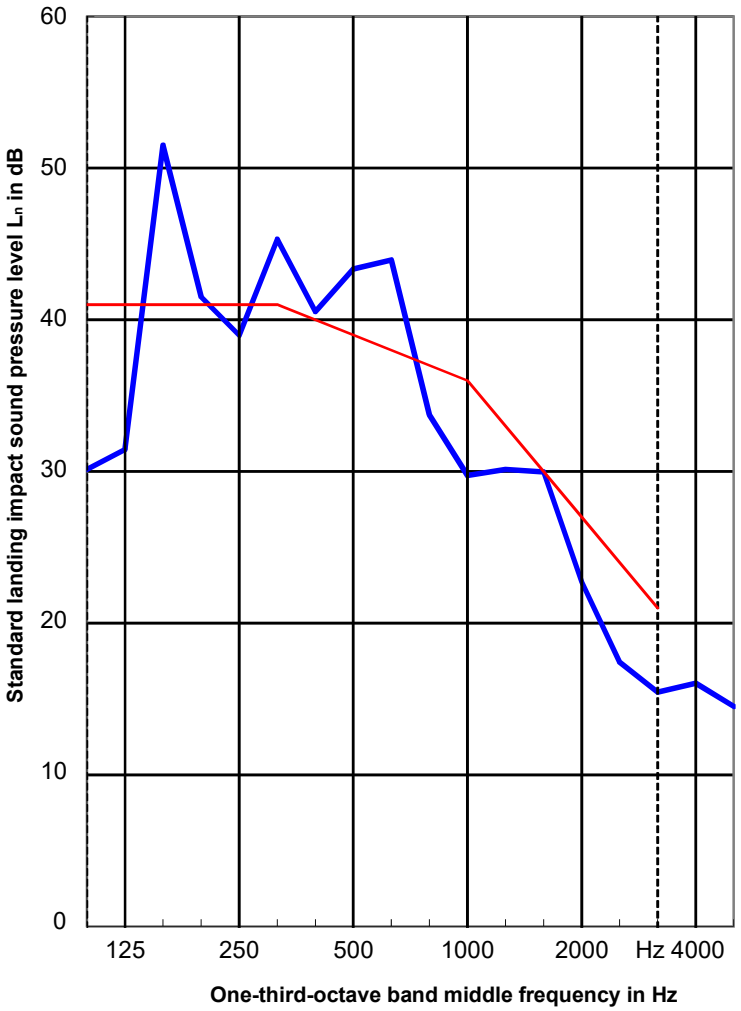
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$L_{n,w,landing}$ = 39 dB

$C_{I,landing}$ = 0 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 39 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	30.1
125	31.4
160	51.5
200	41.5
250	39.0
315	45.3
400	40.5
500	43.4
630	43.9
800	1) 33.7
1000	1) 29.7
1250	1) 30.1
1600	1) 30.0
2000	1) 22.7
2500	1) 17.4
3150	1) 15.4
4000	1) 16.0
5000	14.5



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
12.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

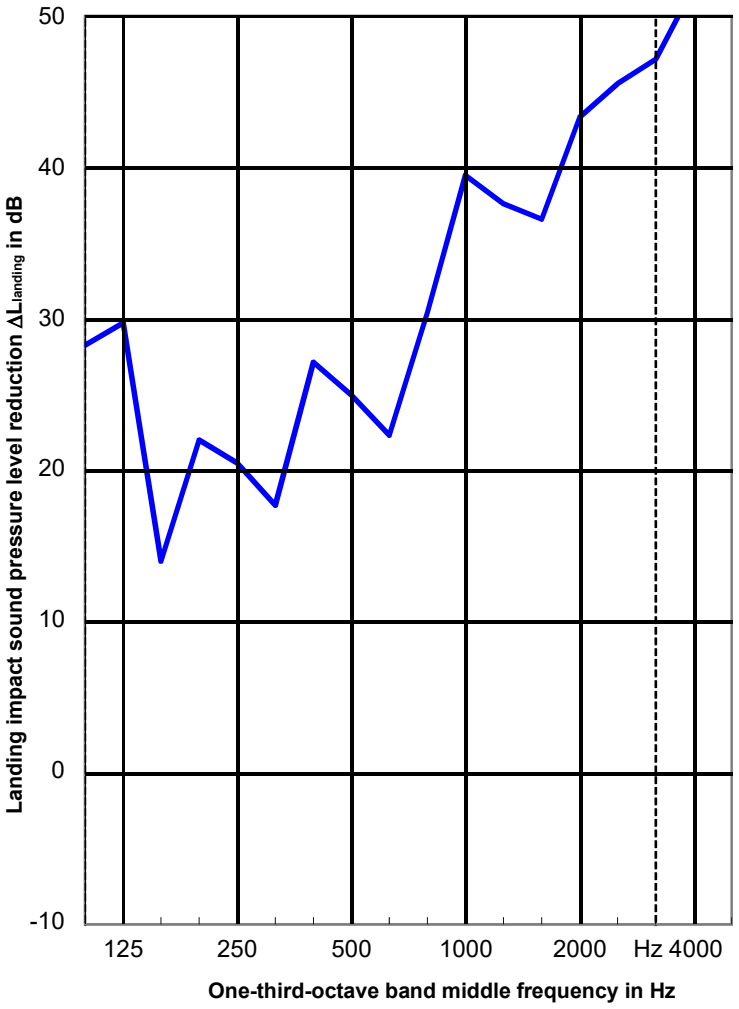
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 35 dB

$C_{I,\Delta,landing}$ = -11 dB

$\Delta L_{lin,landing}$ = 24 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	28.2
125	60.8	29.7
160	60.9	14.0
200	63.0	22.0
250	62.8	20.4
315	65.7	17.7
400	65.8	1) 27.1
500	66.2	24.9
630	68.1	22.3
800	68.2	30.4
1000	68.9	1) 39.5
1250	68.7	1) 37.6
1600	68.2	36.6
2000	67.4	1) 43.3
2500	65.8	1) 45.5
3150	63.8	1) 47.1
4000	65.1	1) 51.9
5000	70.0	< 1) 59.9



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
12.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

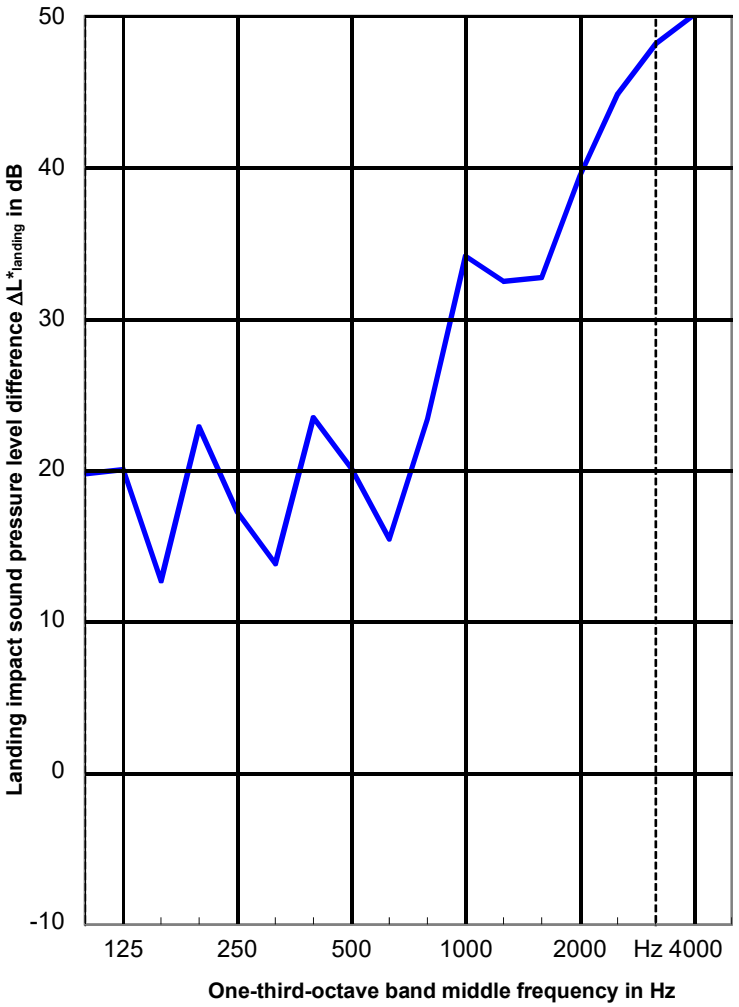
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 30 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	19.8
125	51.1	20.0
160	59.6	12.7
200	63.8	22.8
250	59.6	17.2
315	61.8	13.8
400	62.1	1) 23.5
500	61.3	20.1
630	61.2	15.4
800	61.2	23.4
1000	63.6	1) 34.1
1250	63.6	1) 32.5
1600	64.4	32.7
2000	63.5	1) 39.4
2500	65.1	1) 44.8
3150	64.9	1) 48.1
4000	63.3	1) 50.1
5000	61.9	< 1) 51.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
12.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

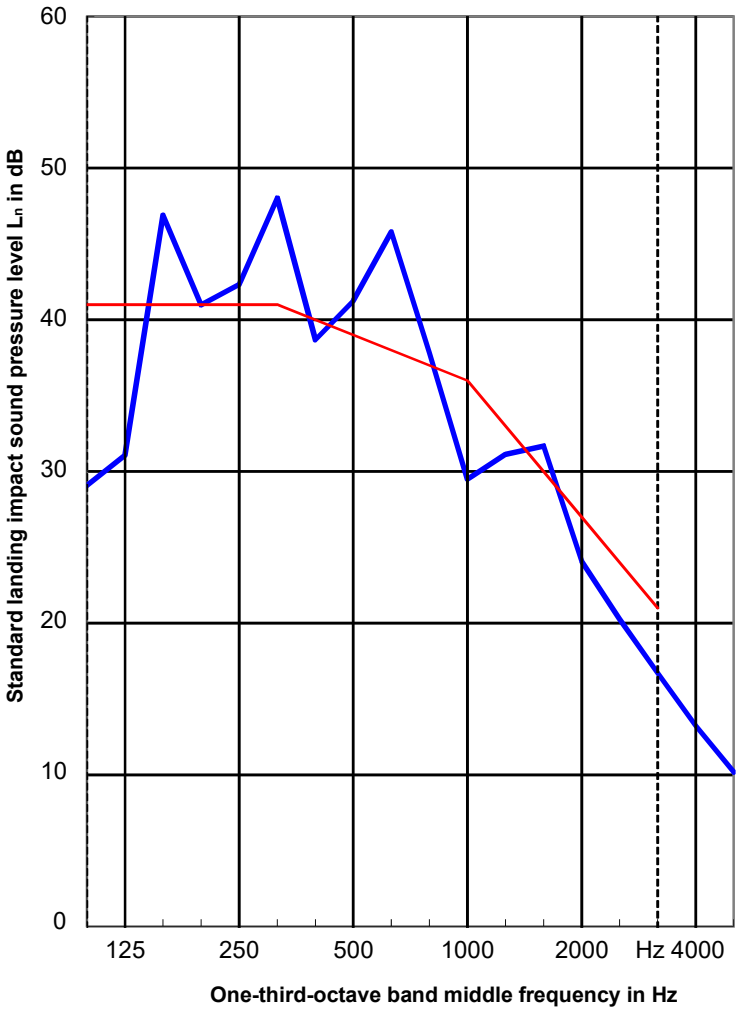
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$L_{n,w,landing}$ = 39 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 38 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	29.1
125	31.1
160	46.9
200	41.0
250	42.3
315	48.0
400	1) 38.7
500	41.2
630	45.8
800	37.8
1000	1) 29.5
1250	1) 31.1
1600	31.7
2000	1) 24.1
2500	1) 20.3
3150	1) 16.7
4000	1) 13.2
5000	< 1) 10.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
25.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

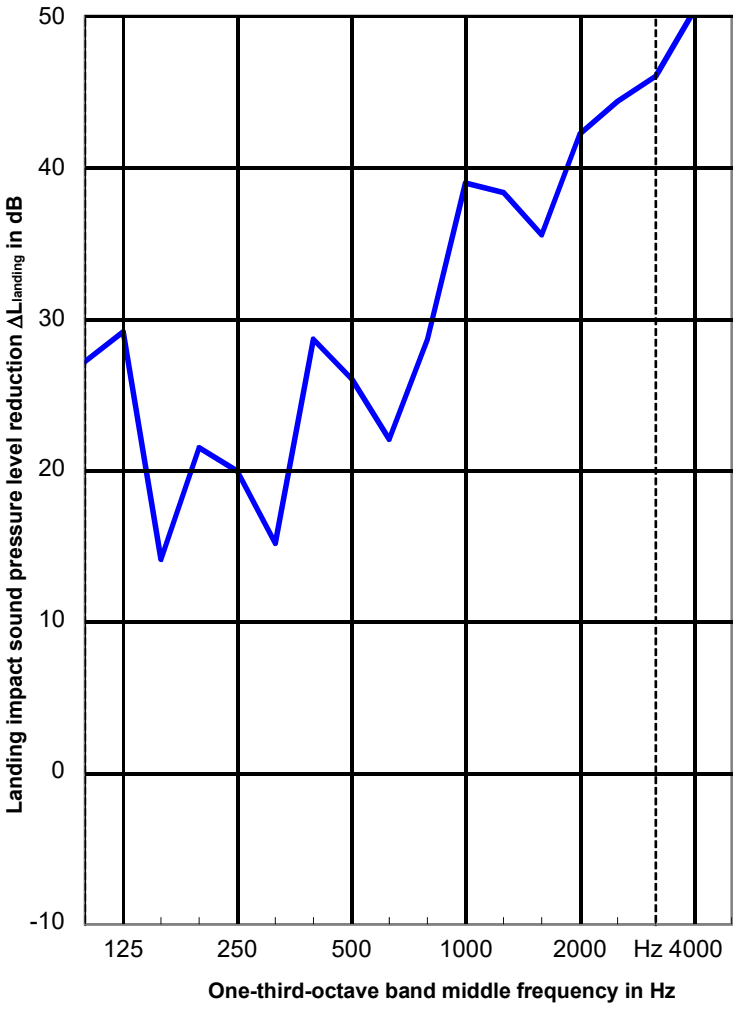
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 34 dB

$C_{I,\Delta,landing}$ = 11 dB

$\Delta L_{lin,landing}$ = 23 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	27.1
125	60.8	29.1
160	60.9	14.1
200	63.0	21.5
250	62.8	19.9
315	65.7	15.1
400	65.8	1) 28.6
500	66.2	26.0
630	68.1	22.0
800	68.2	28.6
1000	68.9	1) 39.0
1250	68.7	1) 38.3
1600	68.2	35.5
2000	67.4	1) 42.2
2500	65.8	1) 44.3
3150	63.8	1) 46.0
4000	65.1	1) 50.3
5000	70.0	< 1) 59.7



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
25.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

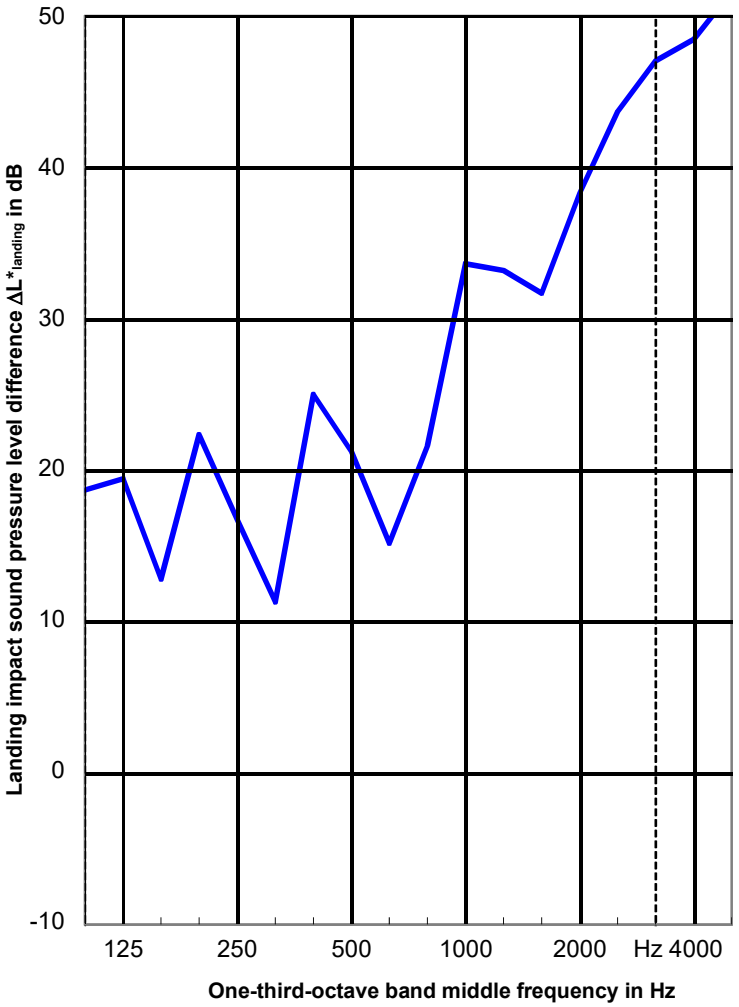
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 30 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	18.7
125	51.1	19.4
160	59.6	12.8
200	63.8	22.4
250	59.6	16.7
315	61.8	11.3
400	62.1	1) 25.0
500	61.3	21.2
630	61.2	15.2
800	61.2	21.6
1000	63.6	1) 33.6
1250	63.6	1) 33.2
1600	64.4	31.7
2000	63.5	1) 38.3
2500	65.1	1) 43.7
3150	64.9	1) 47.0
4000	63.3	1) 48.5
5000	61.9	< 1) 51.6



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
25.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

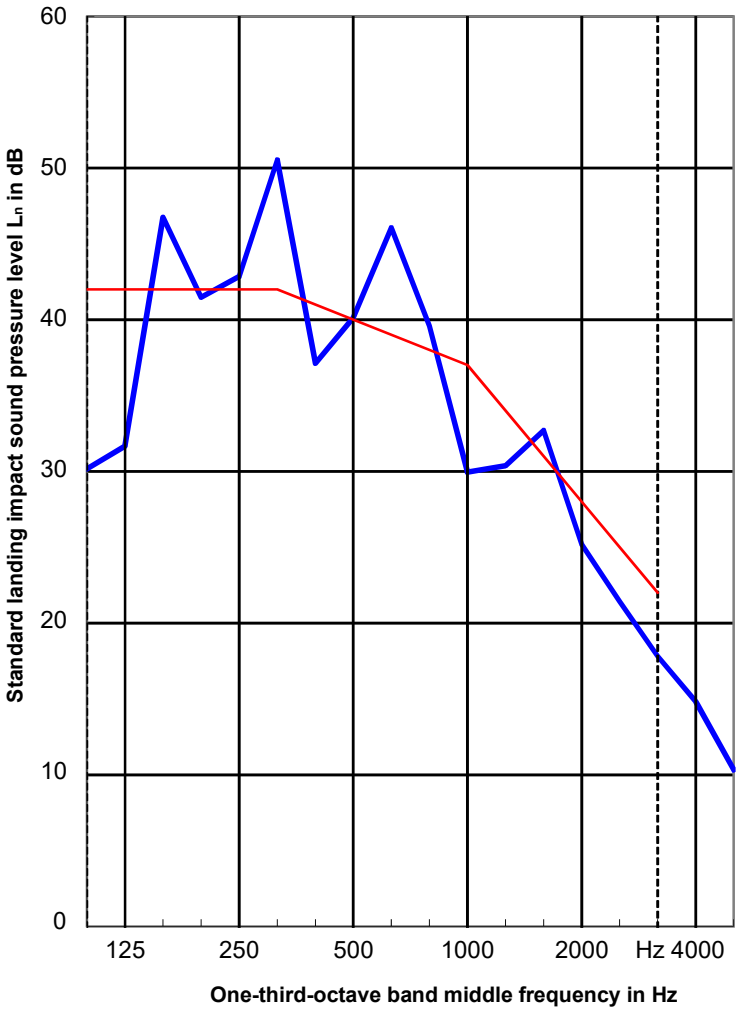
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$L_{n,w,landing}$ = 40 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 39 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	30.2
125	31.7
160	46.8
200	41.5
250	42.8
315	50.5
400	1) 37.1
500	40.1
630	46.1
800	39.6
1000	1) 30.0
1250	1) 30.4
1600	32.7
2000	1) 25.2
2500	1) 21.4
3150	1) 17.8
4000	1) 14.8
5000	< 1) 10.3



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
38.4 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

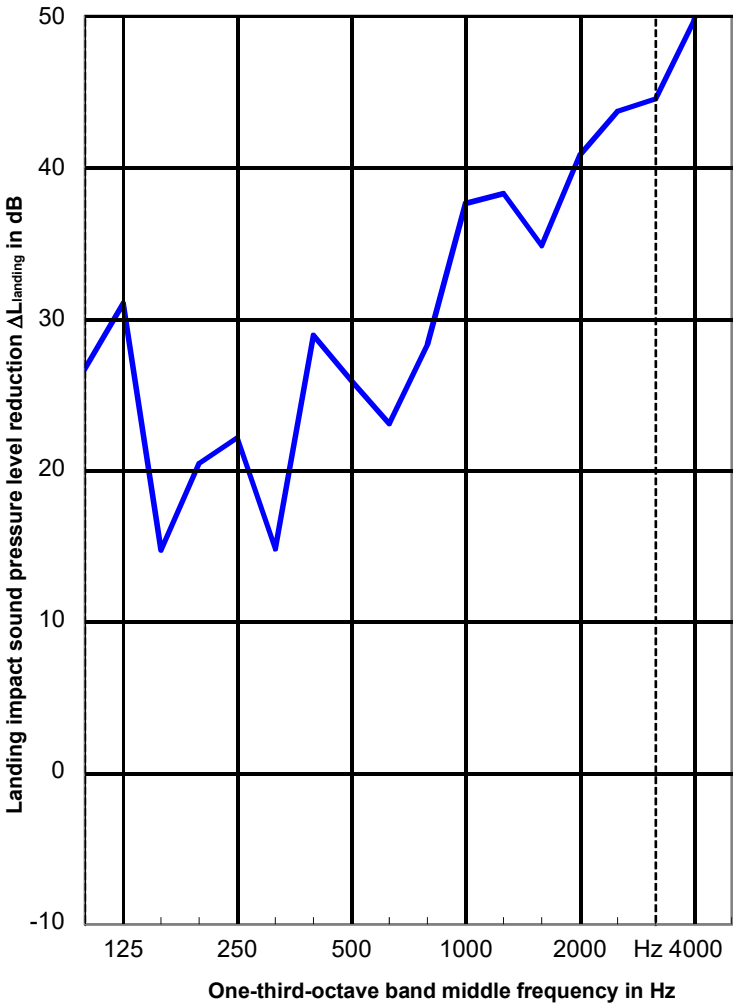
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 34 dB

$C_{I,\Delta,landing}$ = -11 dB

$\Delta L_{lin,landing}$ = 23 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	26.7
125	60.8	1) 31.0
160	60.9	14.7
200	63.0	20.4
250	62.8	22.1
315	65.7	14.8
400	65.8	1) 28.9
500	66.2	25.9
630	68.1	23.1
800	68.2	28.3
1000	68.9	1) 37.6
1250	68.7	1) 38.3
1600	68.2	34.8
2000	67.4	1) 40.8
2500	65.8	1) 43.7
3150	63.8	1) 44.5
4000	65.1	1) 49.6
5000	70.0	58.6



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
38.4 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

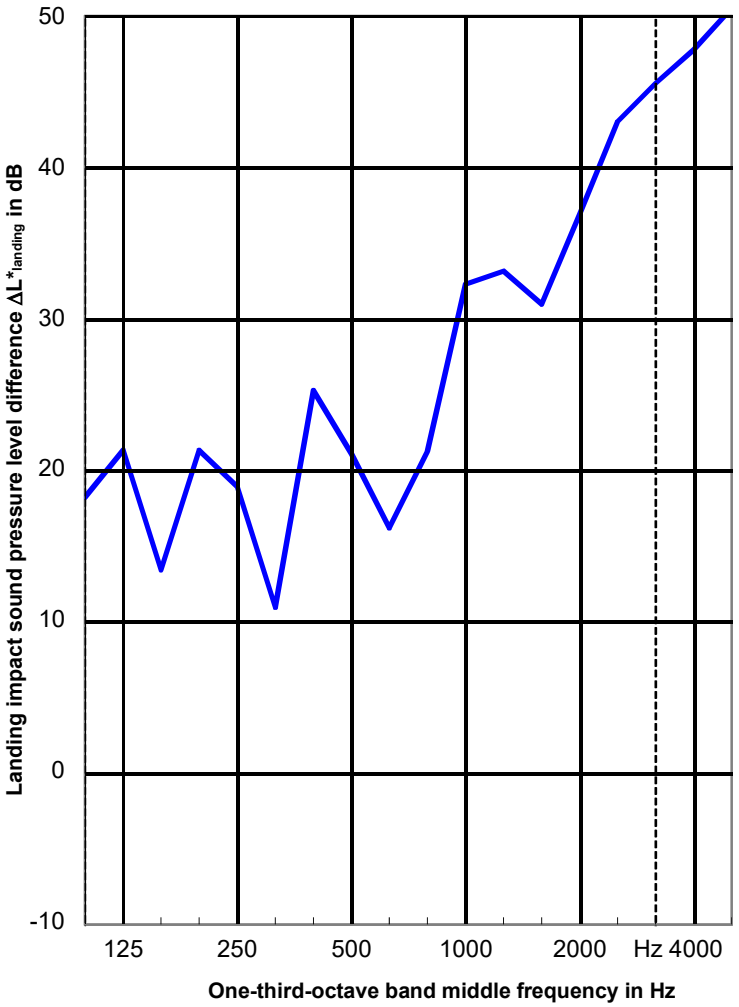
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 30 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	18.2
125	51.1	1) 21.3
160	59.6	13.4
200	63.8	21.3
250	59.6	18.9
315	61.8	10.9
400	62.1	1) 25.3
500	61.3	21.1
630	61.2	16.2
800	61.2	21.2
1000	63.6	1) 32.3
1250	63.6	1) 33.1
1600	64.4	31.0
2000	63.5	1) 36.9
2500	65.1	1) 43.0
3150	64.9	1) 45.6
4000	63.3	1) 47.8
5000	61.9	50.5



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 5 cm
38.4 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

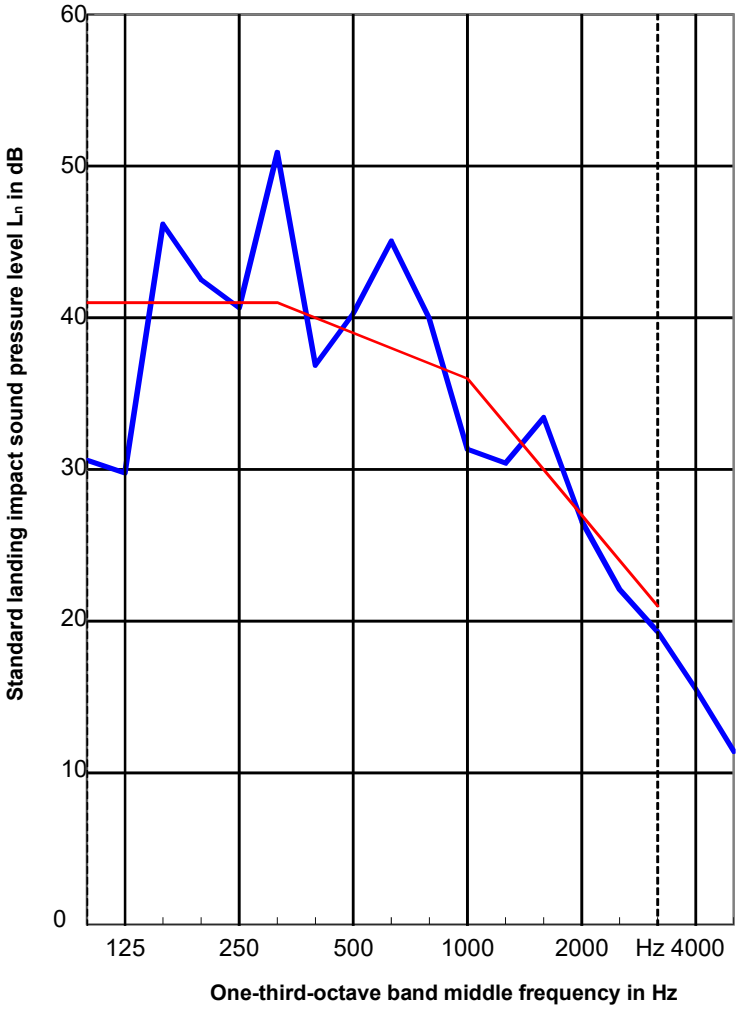
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 05/03/2021**
Temperature: 20.6 °C, relative humidity: 45%, air pressure: 968 hPa

$L_{n,w,landing}$ = 39 dB

$C_{I,landing}$ = 0 dB

$L_{n,w,landing} + C_{I,landing}$ = 39 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	30.6
125	1) 29.8
160	46.2
200	42.5
250	40.7
315	50.9
400	1) 36.9
500	40.3
630	45.0
800	39.9
1000	1) 31.3
1250	1) 30.4
1600	33.4
2000	1) 26.6
2500	1) 22.1
3150	1) 19.3
4000	1) 15.5
5000	11.4



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

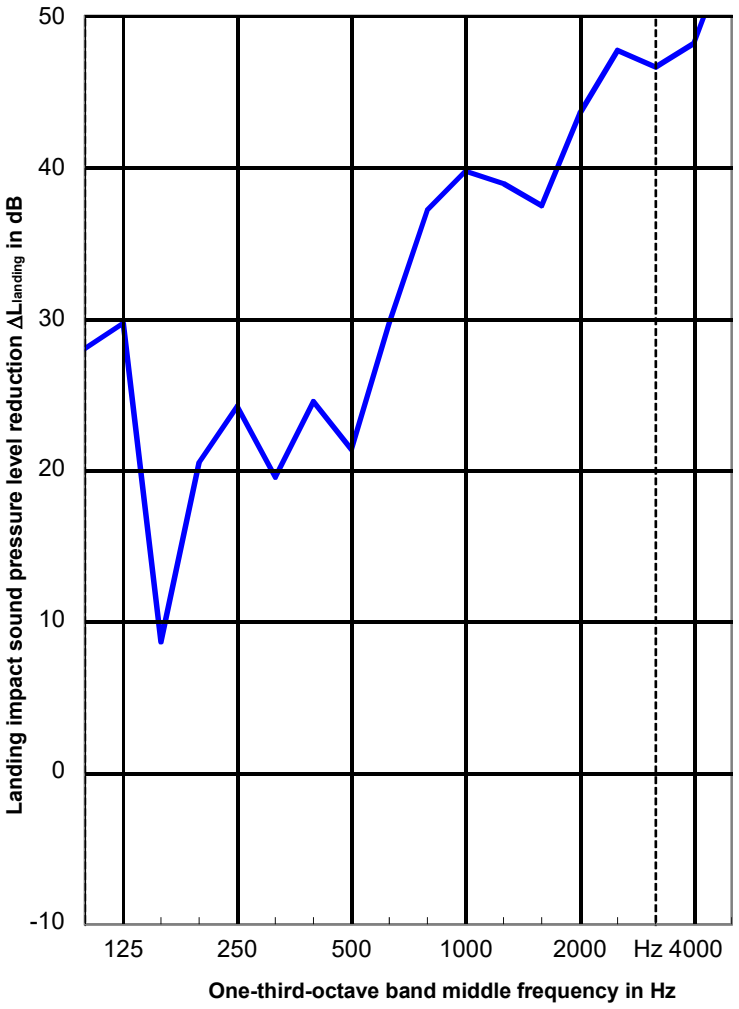
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$\Delta L_{W,landing}$ = 35 dB

$C_{I,\Delta,landing}$ = -14 dB

$\Delta L_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	28.0
125	60.8	29.7
160	60.9	8.7
200	63.0	20.5
250	62.8	24.2
315	65.7	19.5
400	65.8	24.5
500	66.2	21.4
630	68.1	29.7
800	68.2	1) 37.2
1000	68.9	1) 39.7
1250	68.7	1) 38.9
1600	68.2	37.4
2000	67.4	1) 43.5
2500	65.8	1) 47.7
3150	63.8	1) 46.6
4000	65.1	48.2
5000	70.0	54.9



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

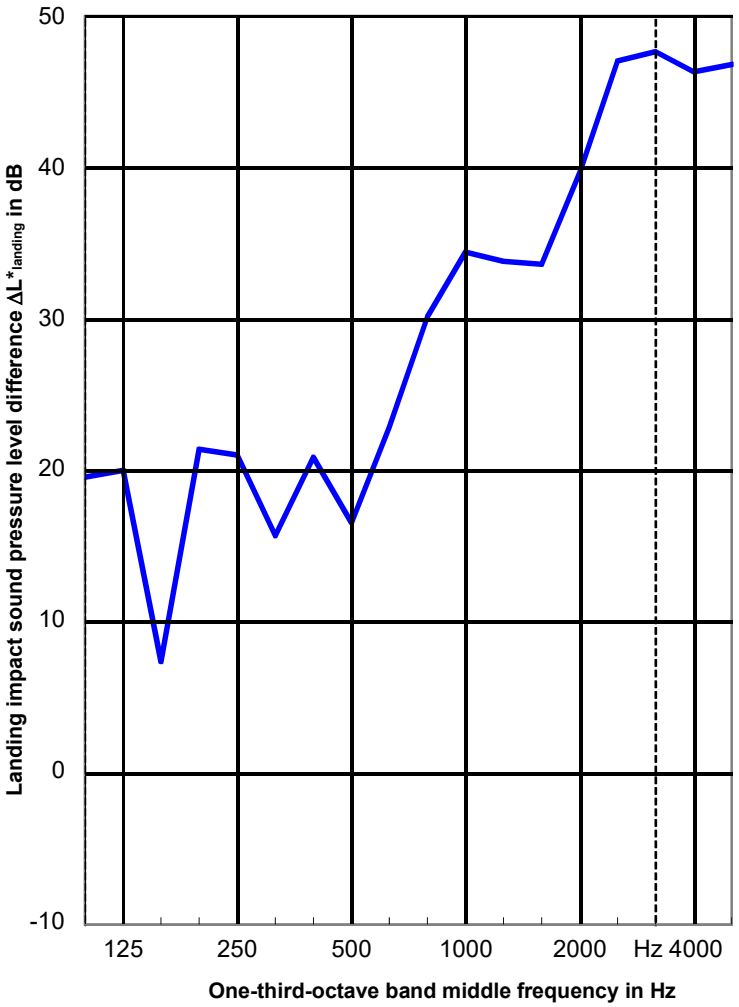
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$\Delta L^*_{W,landing}$ = 31 dB

$C^*_{I,\Delta,landing}$ = -12 dB

$\Delta L^*_{lin,landing}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	19.6
125	51.1	20.0
160	59.6	7.4
200	63.8	21.4
250	59.6	21.0
315	61.8	15.7
400	62.1	20.9
500	61.3	16.5
630	61.2	22.8
800	61.2	1) 30.1
1000	63.6	1) 34.4
1250	63.6	1) 33.8
1600	64.4	33.6
2000	63.5	1) 39.7
2500	65.1	1) 47.0
3150	64.9	1) 47.6
4000	63.3	46.3
5000	61.9	46.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

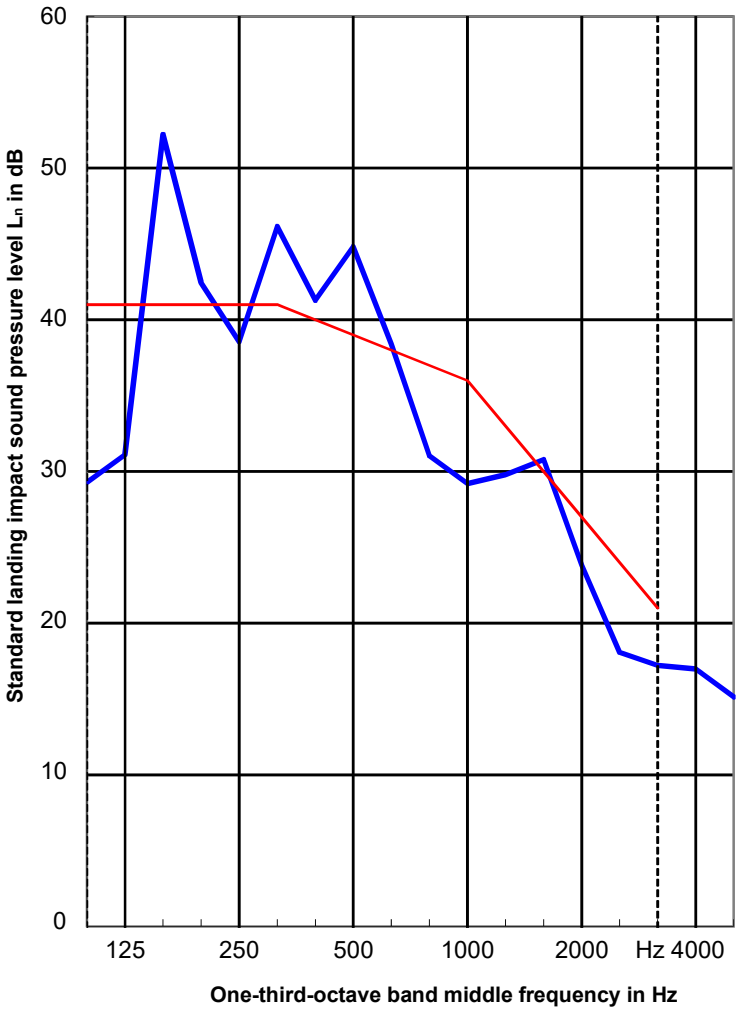
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$L_{n,w,landing}$ = 39 dB

$C_{I,landing}$ = 1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 40 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	29.3
125	31.1
160	52.2
200	42.4
250	38.6
315	46.1
400	41.3
500	44.8
630	38.4
800	1) 31.0
1000	1) 29.2
1250	1) 29.8
1600	30.8
2000	1) 23.8
2500	1) 18.1
3150	1) 17.2
4000	17.0
5000	15.1



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
13.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

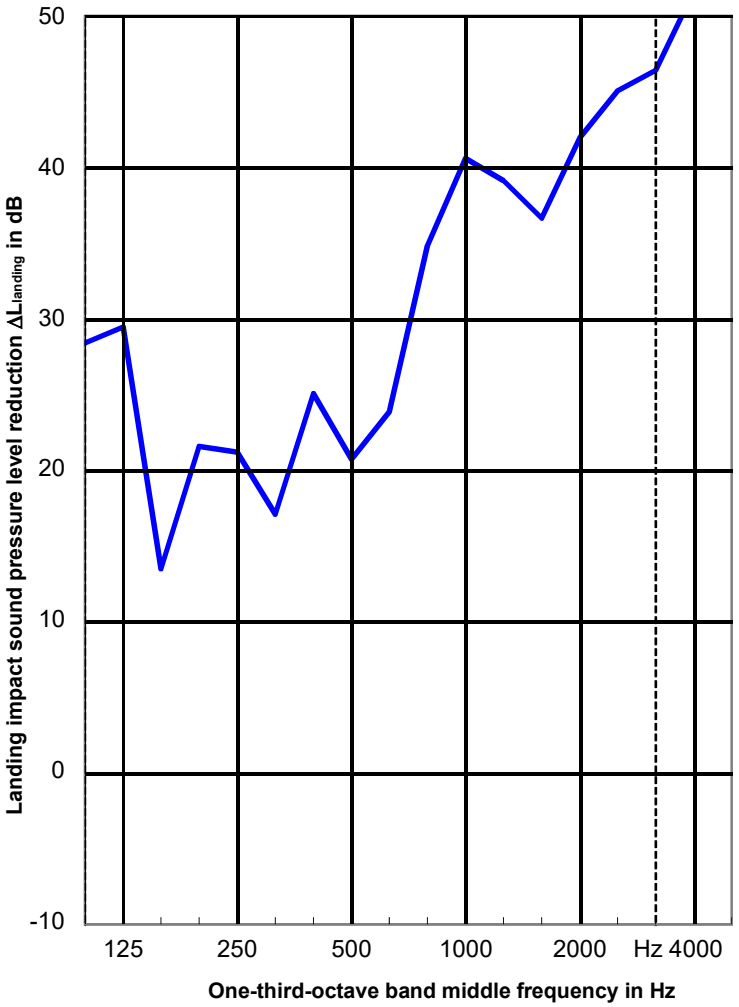
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$\Delta L_{W,landing}$ = 34 dB

$C_{I,\Delta,landing}$ = -11 dB

$\Delta L_{lin,landing}$ = 23 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	28.4
125	60.8	29.4
160	60.9	13.5
200	63.0	21.6
250	62.8	21.2
315	65.7	17.1
400	65.8	25.0
500	66.2	20.7
630	68.1	23.8
800	68.2	1) 34.8
1000	68.9	1) 40.6
1250	68.7	1) 39.1
1600	68.2	36.6
2000	67.4	1) 41.9
2500	65.8	1) 45.0
3150	63.8	1) 46.4
4000	65.1	1) 51.6
5000	70.0	57.4



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
13.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

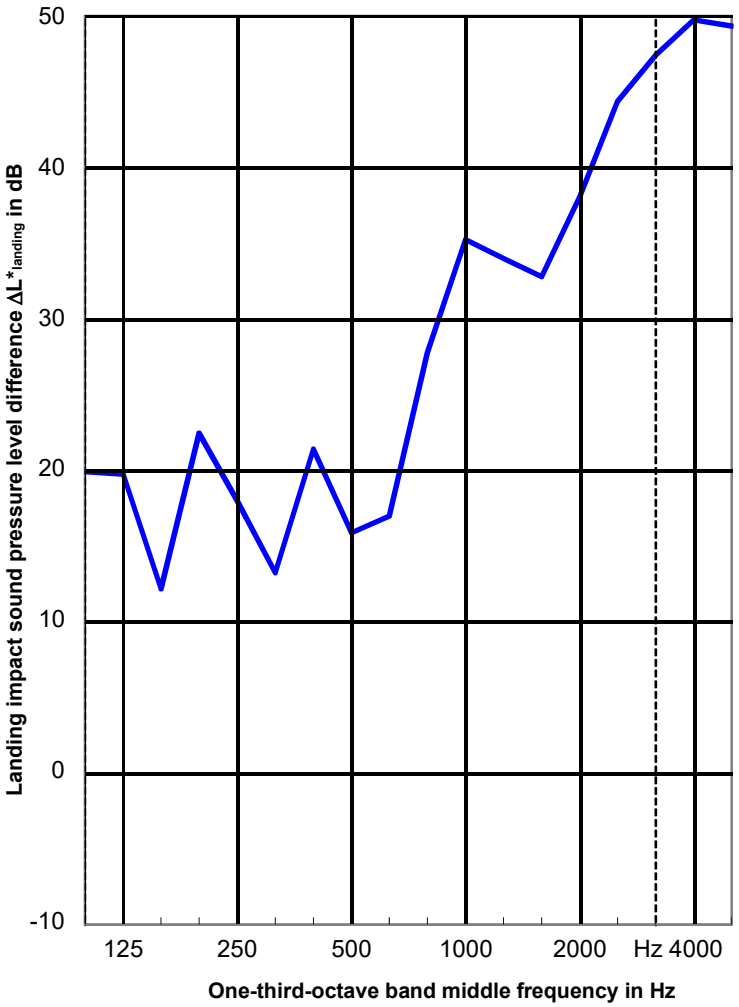
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$\Delta L^*_{W,landing}$ = 30 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	19.9
125	51.1	19.7
160	59.6	12.2
200	63.8	22.4
250	59.6	18.0
315	61.8	13.2
400	62.1	21.4
500	61.3	15.9
630	61.2	17.0
800	61.2	1) 27.8
1000	63.6	1) 35.2
1250	63.6	1) 34.0
1600	64.4	32.8
2000	63.5	1) 38.1
2500	65.1	1) 44.4
3150	64.9	1) 47.4
4000	63.3	1) 49.7
5000	61.9	49.3



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
13.1 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

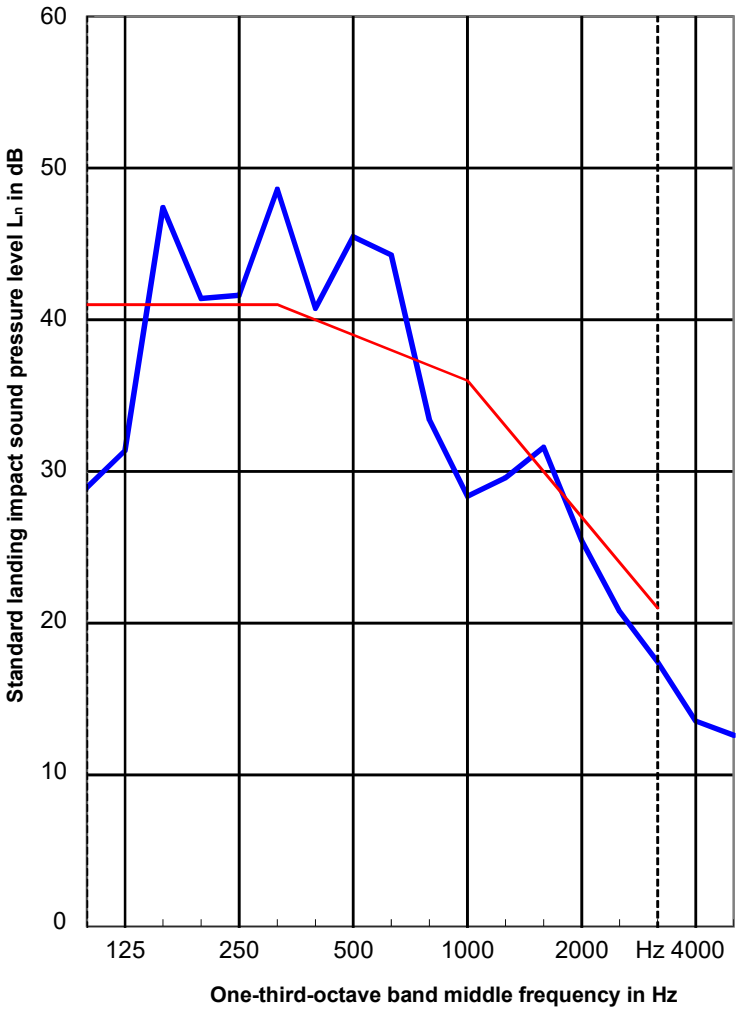
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$L_{n,w,landing}$ = 39 dB

$C_{I,landing}$ = 0 dB

$L_{n,w,landing} + C_{I,landing}$ = 39 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	28.9
125	31.4
160	47.4
200	41.4
250	41.6
315	48.6
400	40.7
500	45.5
630	44.3
800	1) 33.4
1000	1) 28.4
1250	1) 29.6
1600	31.6
2000	1) 25.4
2500	1) 20.7
3150	1) 17.4
4000	1) 13.5
5000	12.6



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
26.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

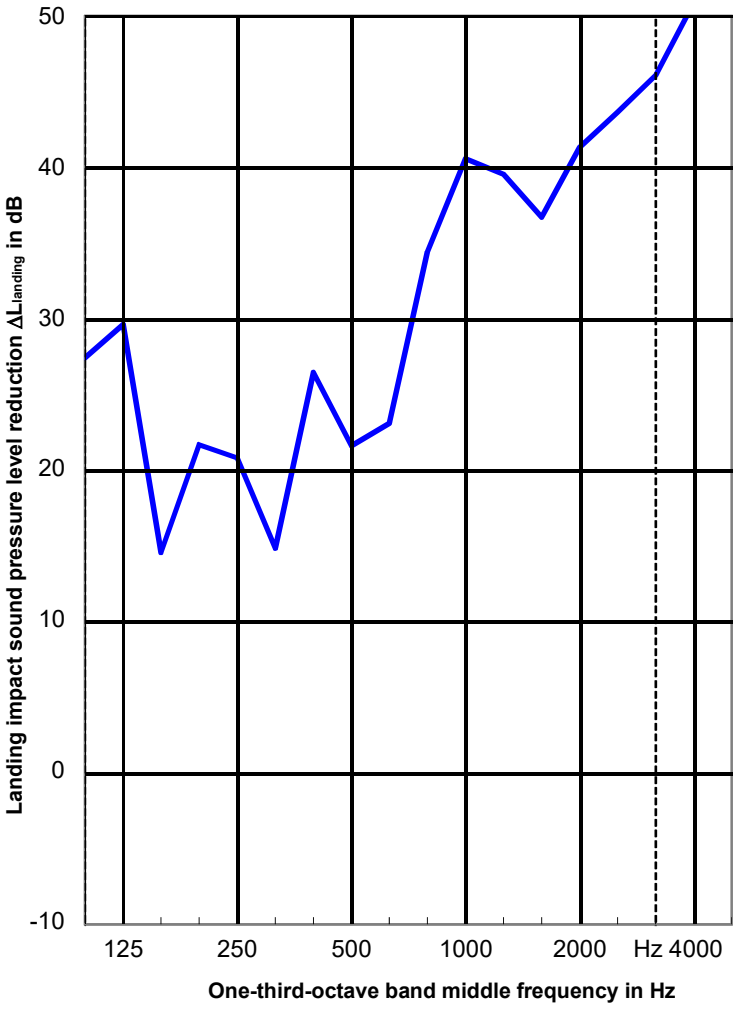
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$\Delta L_{W,landing}$ = 34 dB

$C_{I,\Delta,landing}$ = -11 dB

$\Delta L_{lin,landing}$ = 23 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	27.4
125	60.8	29.6
160	60.9	14.6
200	63.0	21.7
250	62.8	20.8
315	65.7	14.8
400	65.8	26.4
500	66.2	21.6
630	68.1	23.1
800	68.2	1) 34.4
1000	68.9	1) 40.6
1250	68.7	1) 39.5
1600	68.2	36.7
2000	67.4	1) 41.3
2500	65.8	1) 43.6
3150	63.8	1) 46.1
4000	65.1	1) 50.9
5000	70.0	58.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
26.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

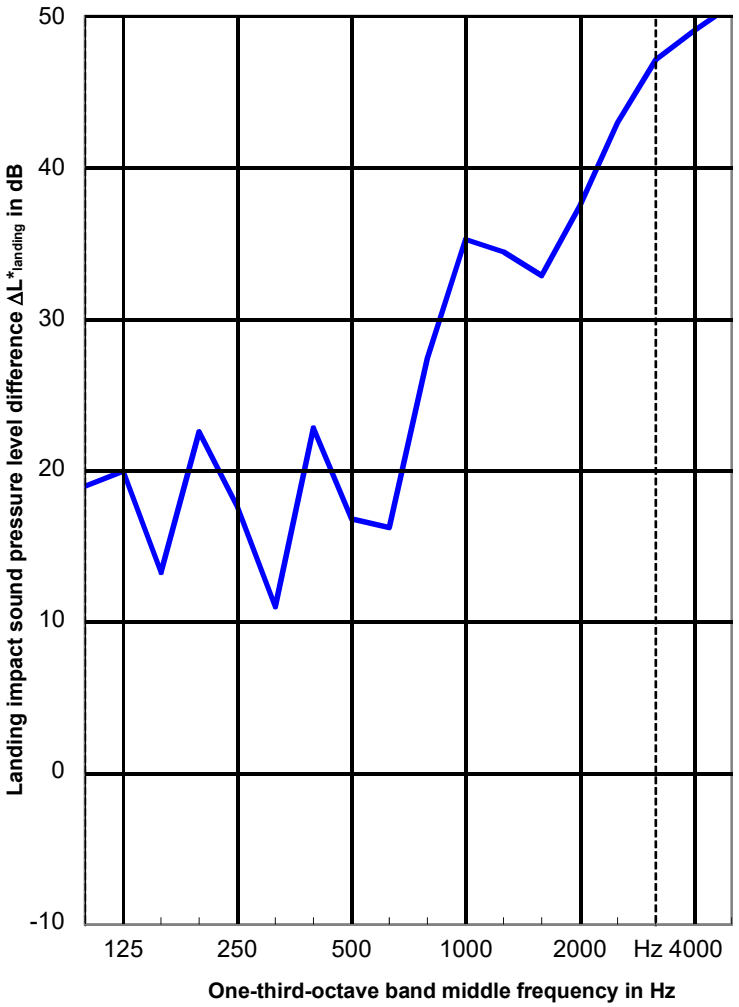
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$\Delta L^*_{W,landing}$ = 30 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	18.9
125	51.1	19.9
160	59.6	13.3
200	63.8	22.5
250	59.6	17.6
315	61.8	11.0
400	62.1	22.8
500	61.3	16.8
630	61.2	16.2
800	61.2	1) 27.4
1000	63.6	1) 35.2
1250	63.6	1) 34.4
1600	64.4	32.9
2000	63.5	1) 37.4
2500	65.1	1) 42.9
3150	64.9	1) 47.1
4000	63.3	1) 49.0
5000	61.9	50.7



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
26.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

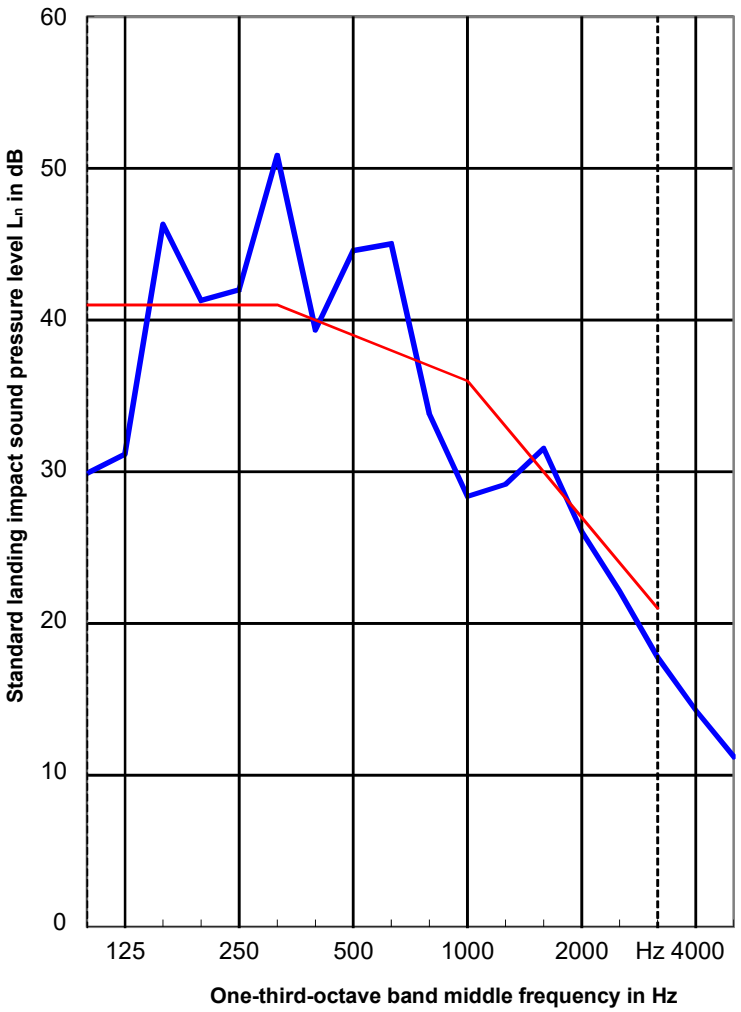
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$L_{n,w,landing}$ = 39 dB

$C_{I,landing}$ = 0 dB

$L_{n,w,landing} + C_{I,landing}$ = 39 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	29.9
125	31.2
160	46.3
200	41.3
250	42.0
315	50.8
400	39.4
500	44.6
630	45.0
800	1) 33.8
1000	1) 28.4
1250	1) 29.2
1600	31.5
2000	1) 26.1
2500	1) 22.2
3150	1) 17.8
4000	1) 14.3
5000	11.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
39.3 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

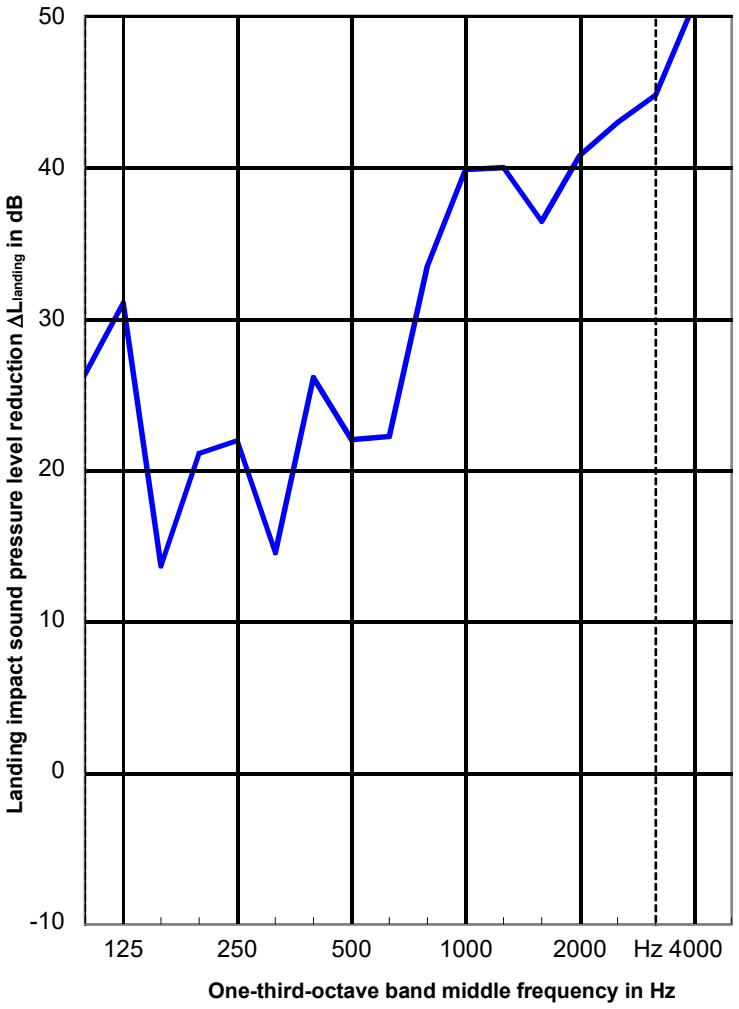
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$\Delta L_{W,landing}$ = 34 dB

$C_{I,\Delta,landing}$ = -12 dB

$\Delta L_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	26.3
125	60.8	1) 31.0
160	60.9	13.7
200	63.0	21.1
250	62.8	21.9
315	65.7	14.5
400	65.8	26.1
500	66.2	22.0
630	68.1	22.2
800	68.2	33.5
1000	68.9	1) 39.9
1250	68.7	1) 40.0
1600	68.2	36.4
2000	67.4	1) 40.8
2500	65.8	1) 43.0
3150	63.8	1) 44.8
4000	65.1	1) 50.7
5000	70.0	< 1) 59.9



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
39.3 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

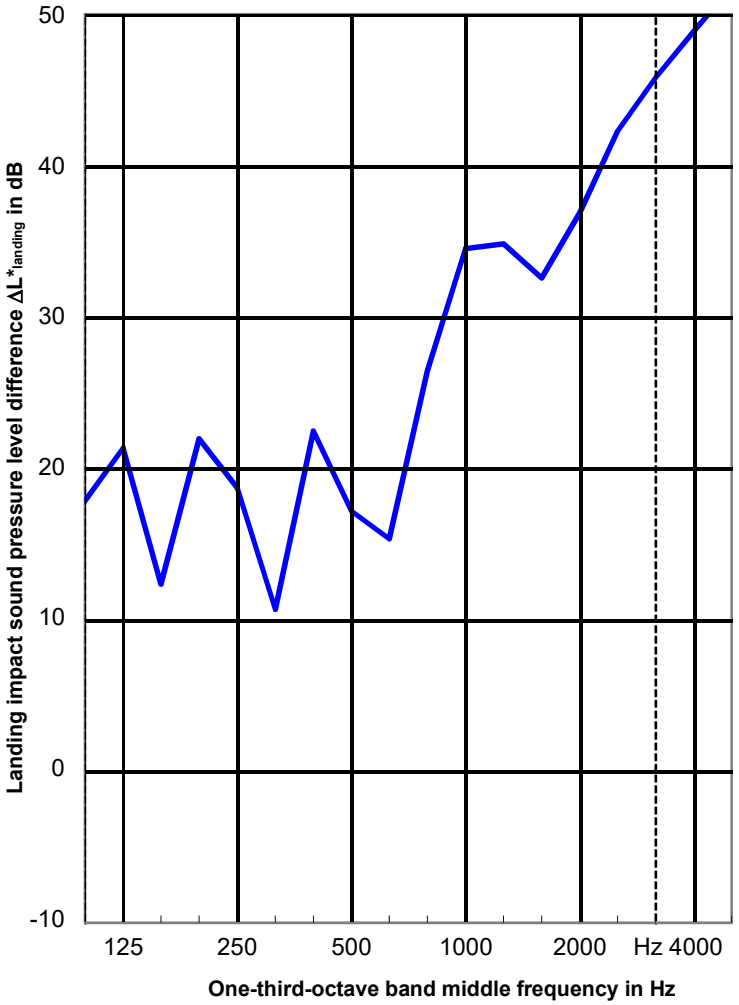
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$\Delta L^*_{W,landing}$ = 30 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 19 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	17.9
125	51.1	1) 21.3
160	59.6	12.4
200	63.8	22.0
250	59.6	18.7
315	61.8	10.7
400	62.1	22.5
500	61.3	17.2
630	61.2	15.4
800	61.2	26.4
1000	63.6	1) 34.5
1250	63.6	1) 34.8
1600	64.4	32.6
2000	63.5	1) 36.9
2500	65.1	1) 42.3
3150	64.9	1) 45.8
4000	63.3	1) 48.9
5000	61.9	< 1) 51.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SPH with 20mm elastomer bearing, tested with gap spacing z = 10 cm
39.3 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

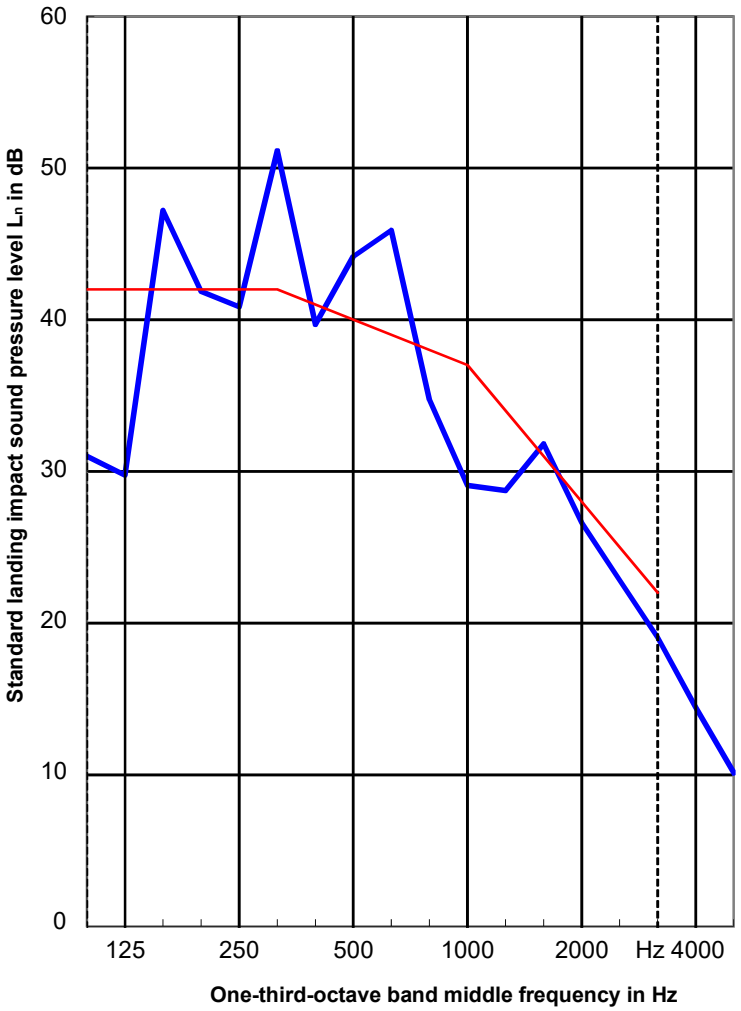
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 04/03/2021**
Temperature: 20.3 °C, relative humidity: 44%, air pressure: 964 hPa

$L_{n,w,landing}$ = 40 dB

$C_{I,landing}$ = 0 dB

$L_{n,w,landing} + C_{I,landing}$ = 40 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	31.0
125	1) 29.8
160	47.2
200	41.9
250	40.9
315	51.1
400	39.7
500	44.2
630	45.9
800	34.7
1000	1) 29.1
1250	1) 28.7
1600	31.8
2000	1) 26.6
2500	1) 22.8
3150	1) 19.0
4000	1) 14.4
5000	< 1) 10.1



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

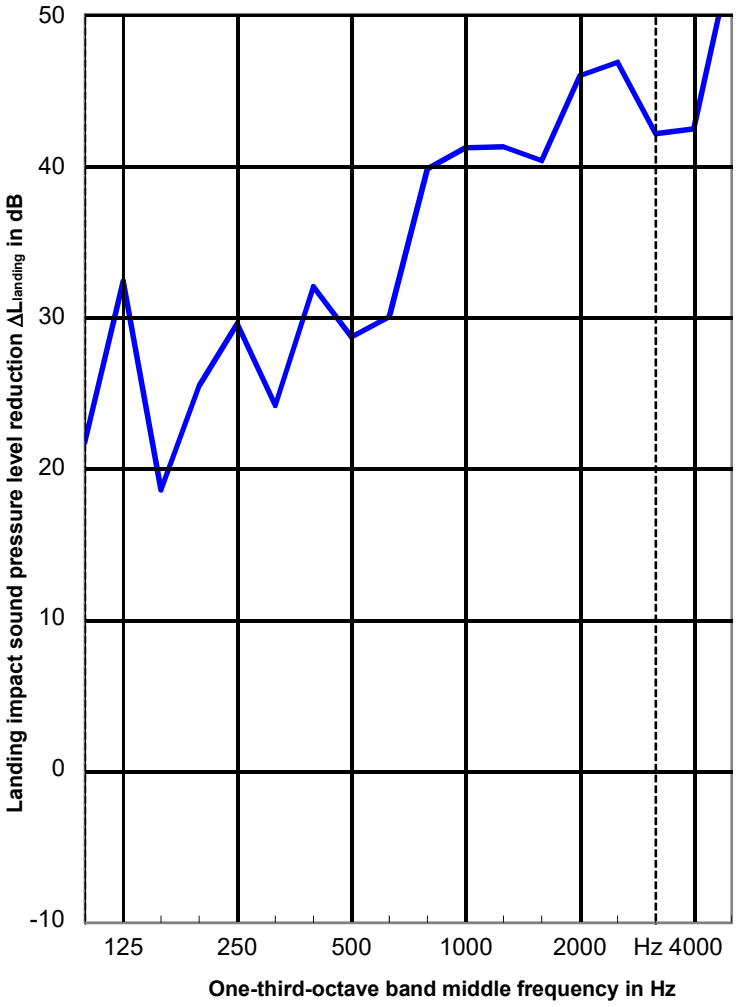
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 38 dB

$C_{I,\Delta,landing}$ = -10 dB

$\Delta L_{lin,landing}$ = 28 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.8
125	60.8	32.4
160	60.9	18.6
200	63.0	25.5
250	62.8	1) 29.5
315	65.7	24.1
400	65.8	1) 32.0
500	66.2	1) 28.7
630	68.1	30.0
800	68.2	1) 39.8
1000	68.9	1) 41.2
1250	68.7	1) 41.2
1600	68.2	1) 40.3
2000	67.4	1) 45.9
2500	65.8	1) 46.8
3150	63.8	42.1
4000	65.1	42.4
5000	70.0	53.8



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

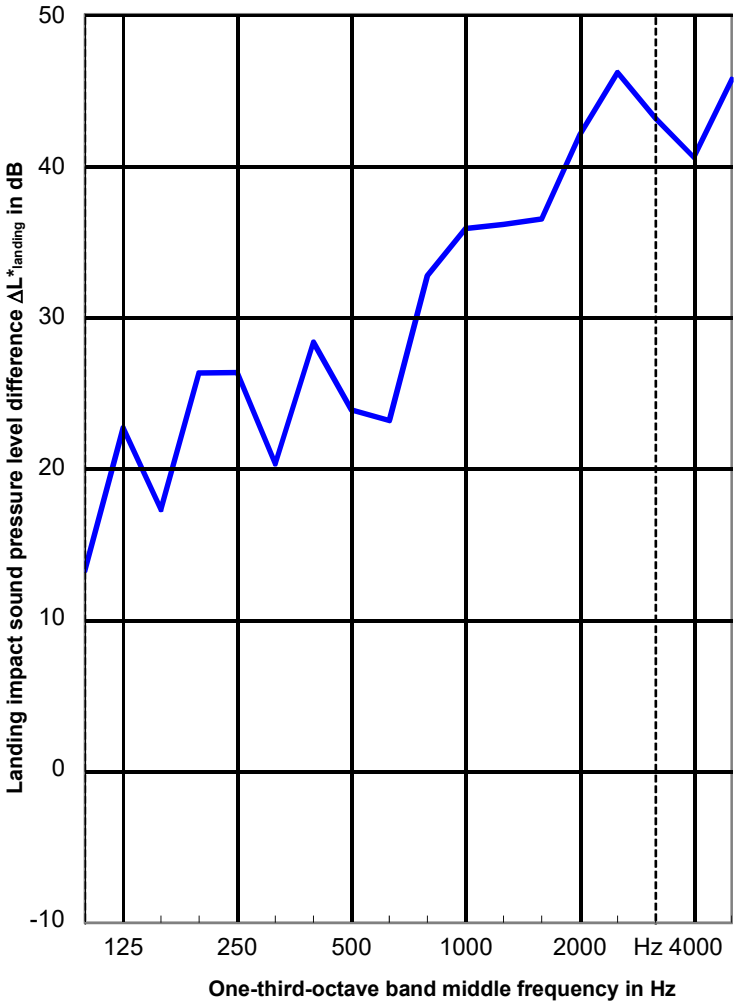
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 34 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 24 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	13.3
125	51.1	22.7
160	59.6	17.3
200	63.8	26.3
250	59.6	1) 26.3
315	61.8	20.3
400	62.1	1) 28.3
500	61.3	1) 23.9
630	61.2	23.2
800	61.2	1) 32.7
1000	63.6	1) 35.8
1250	63.6	1) 36.1
1600	64.4	1) 36.5
2000	63.5	1) 42.0
2500	65.1	1) 46.2
3150	64.9	43.1
4000	63.3	40.6
5000	61.9	45.7



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

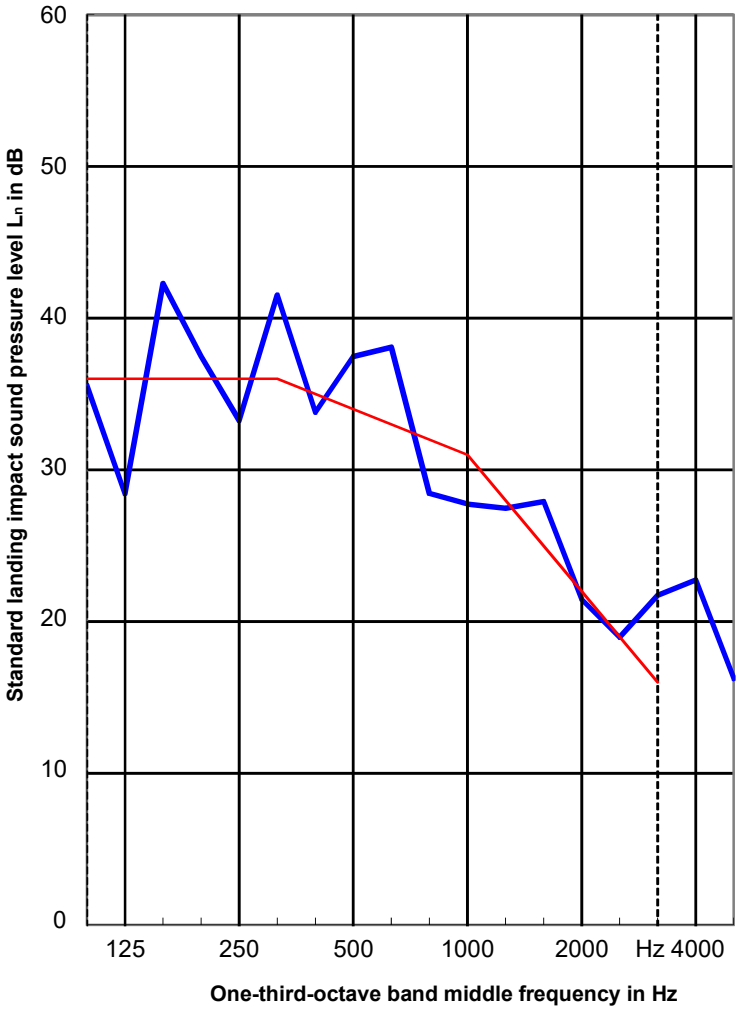
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 34 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 33 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	35.5
125	28.4
160	42.3
200	37.5
250	1) 33.2
315	41.5
400	1) 33.8
500	1) 37.5
630	38.1
800	1) 28.4
1000	1) 27.7
1250	1) 27.5
1600	1) 27.9
2000	1) 21.4
2500	1) 19.0
3150	21.7
4000	22.7
5000	16.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
12.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

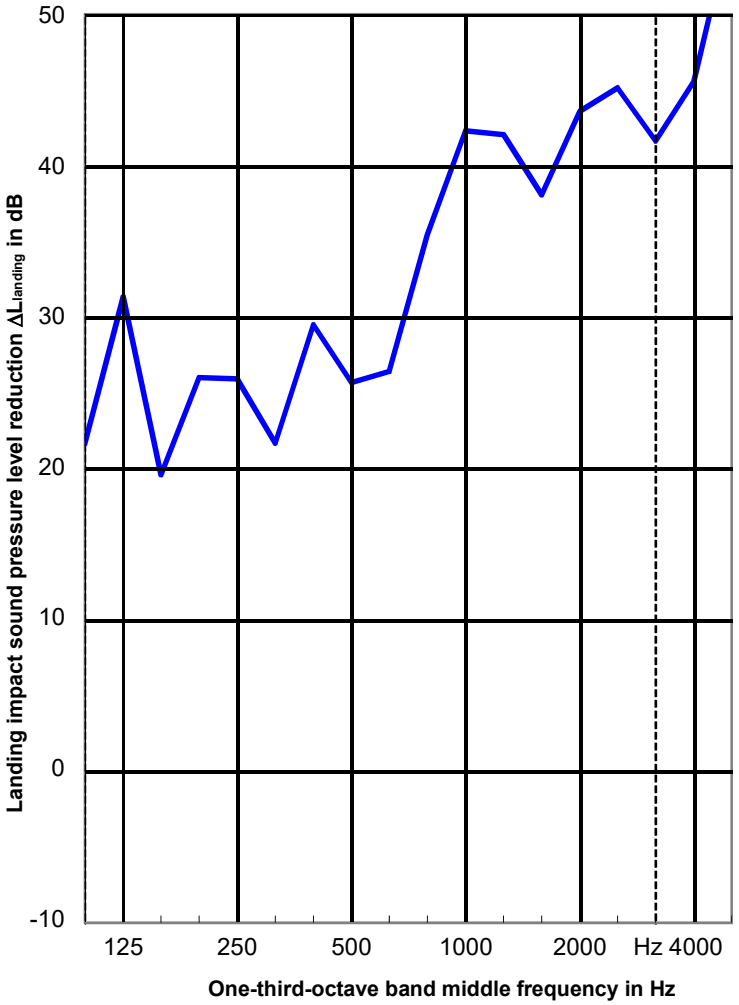
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 37 dB

$C_{I,\Delta,landing}$ = -10 dB

$\Delta L_{lin,landing}$ = 27 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.7
125	60.8	31.3
160	60.9	19.6
200	63.0	26.0
250	62.8	1) 25.9
315	65.7	21.7
400	65.8	1) 29.5
500	66.2	25.7
630	68.1	26.4
800	68.2	1) 35.4
1000	68.9	1) 42.3
1250	68.7	1) 42.0
1600	68.2	38.1
2000	67.4	1) 43.6
2500	65.8	1) 45.1
3150	63.8	41.6
4000	65.1	45.5
5000	70.0	56.1



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
12.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

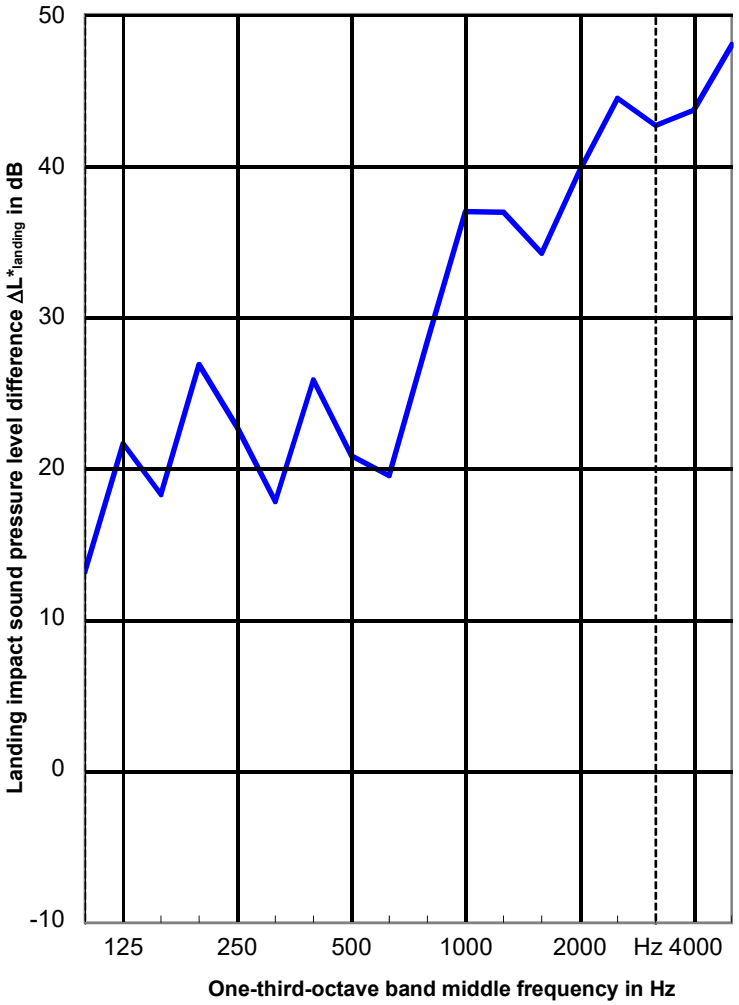
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 33 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 23 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	13.2
125	51.1	21.6
160	59.6	18.3
200	63.8	26.9
250	59.6	1) 22.7
315	61.8	17.8
400	62.1	1) 25.8
500	61.3	20.8
630	61.2	19.5
800	61.2	1) 28.4
1000	63.6	1) 37.0
1250	63.6	1) 36.9
1600	64.4	34.2
2000	63.5	1) 39.7
2500	65.1	1) 44.4
3150	64.9	42.6
4000	63.3	43.7
5000	61.9	48.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
12.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

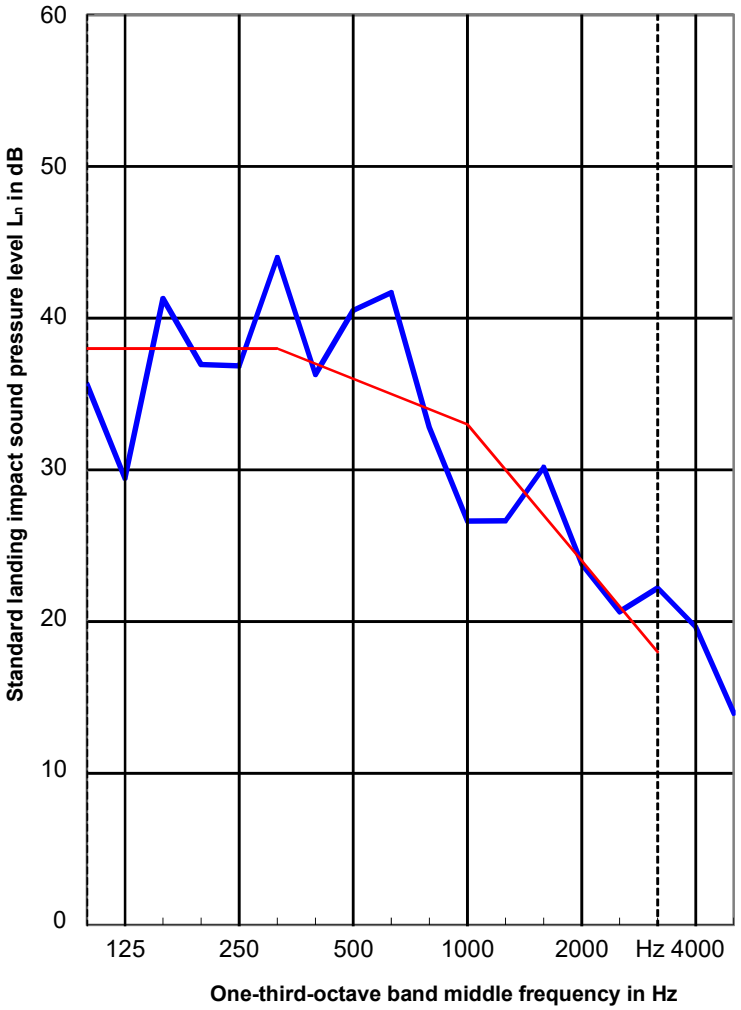
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 36 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 34 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	35.6
125	29.5
160	41.3
200	37.0
250	1) 36.9
315	44.0
400	1) 36.3
500	40.5
630	41.7
800	1) 32.8
1000	1) 26.6
1250	1) 26.7
1600	30.2
2000	1) 23.8
2500	1) 20.7
3150	22.2
4000	19.6
5000	14.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
25.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

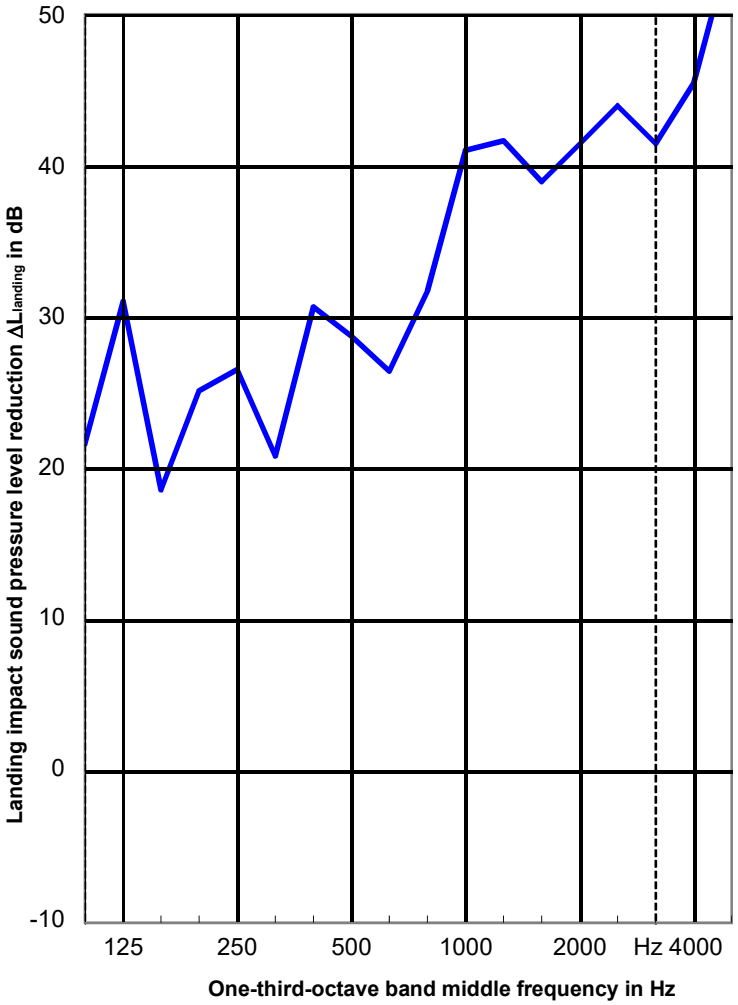
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 36 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 27 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.6
125	60.8	31.0
160	60.9	18.6
200	63.0	25.1
250	62.8	1) 26.5
315	65.7	20.8
400	65.8	1) 30.7
500	66.2	1) 28.7
630	68.1	26.4
800	68.2	31.7
1000	68.9	1) 41.0
1250	68.7	1) 41.6
1600	68.2	38.9
2000	67.4	1) 41.4
2500	65.8	1) 43.9
3150	63.8	41.4
4000	65.1	45.4
5000	70.0	54.8



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
25.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

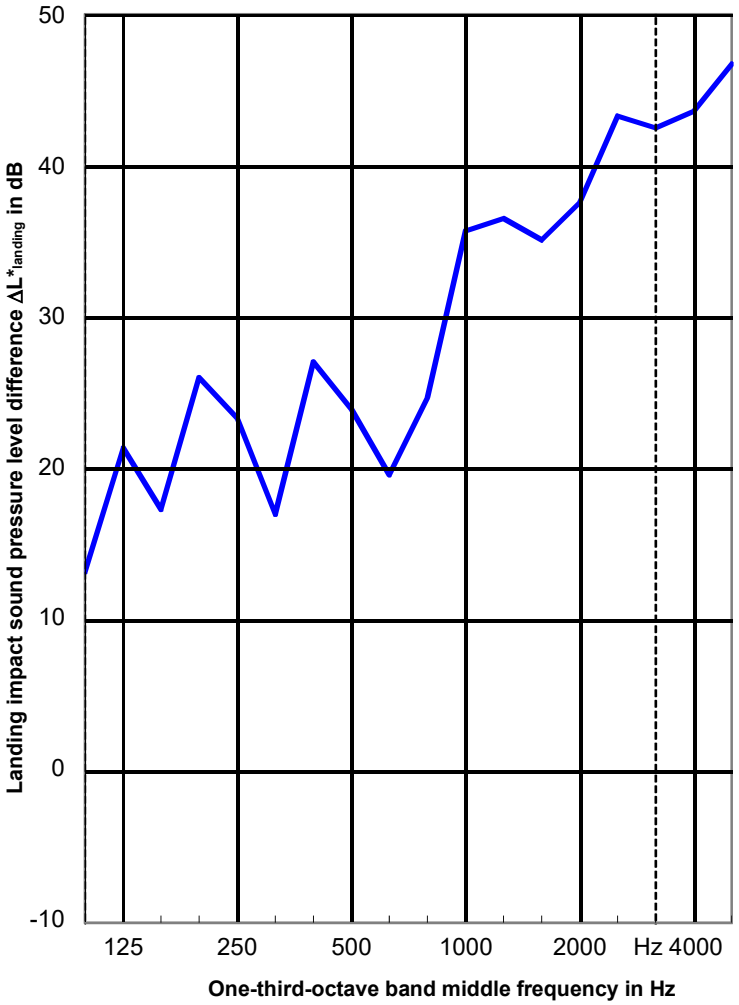
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 32 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	13.2
125	51.1	21.3
160	59.6	17.3
200	63.8	26.0
250	59.6	1) 23.3
315	61.8	17.0
400	62.1	1) 27.0
500	61.3	1) 23.9
630	61.2	19.6
800	61.2	24.7
1000	63.6	1) 35.7
1250	63.6	1) 36.5
1600	64.4	35.1
2000	63.5	1) 37.6
2500	65.1	1) 43.3
3150	64.9	42.5
4000	63.3	43.6
5000	61.9	46.7



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
25.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

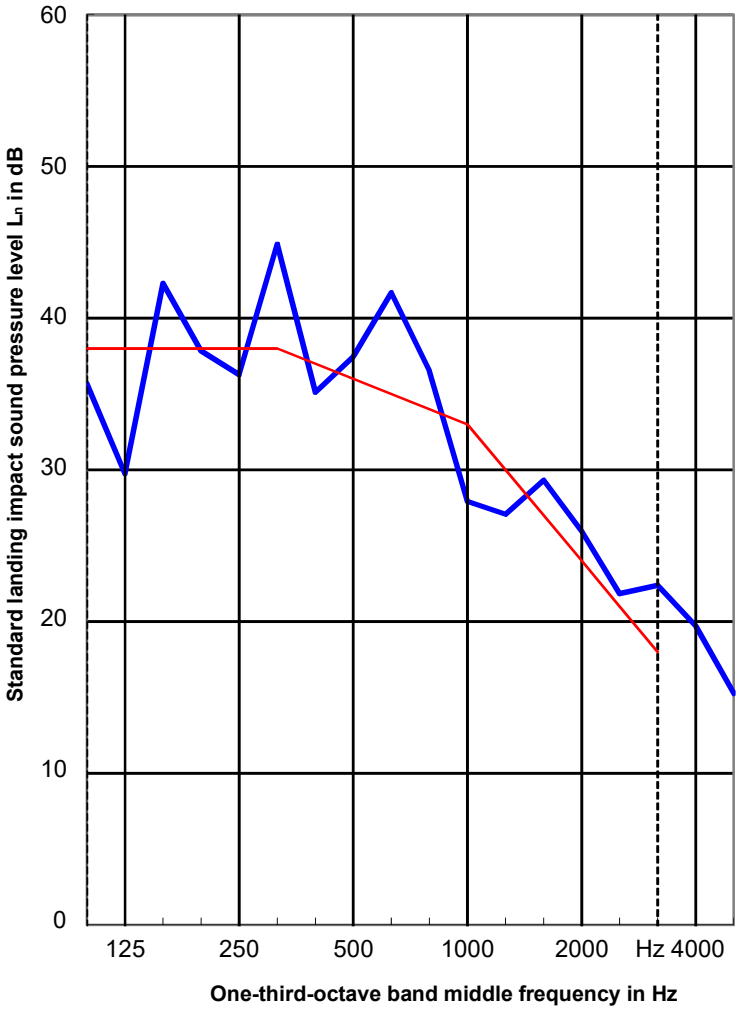
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 36 dB

$C_{I,landing}$ = -1 dB

$L_{n,w,landing} + C_{I,landing}$ = 35 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	35.7
125	29.8
160	42.3
200	37.8
250	1) 36.3
315	44.9
400	1) 35.1
500	1) 37.5
630	41.7
800	36.5
1000	1) 27.9
1250	1) 27.1
1600	29.3
2000	1) 25.9
2500	1) 21.8
3150	22.4
4000	19.7
5000	15.3



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
37.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

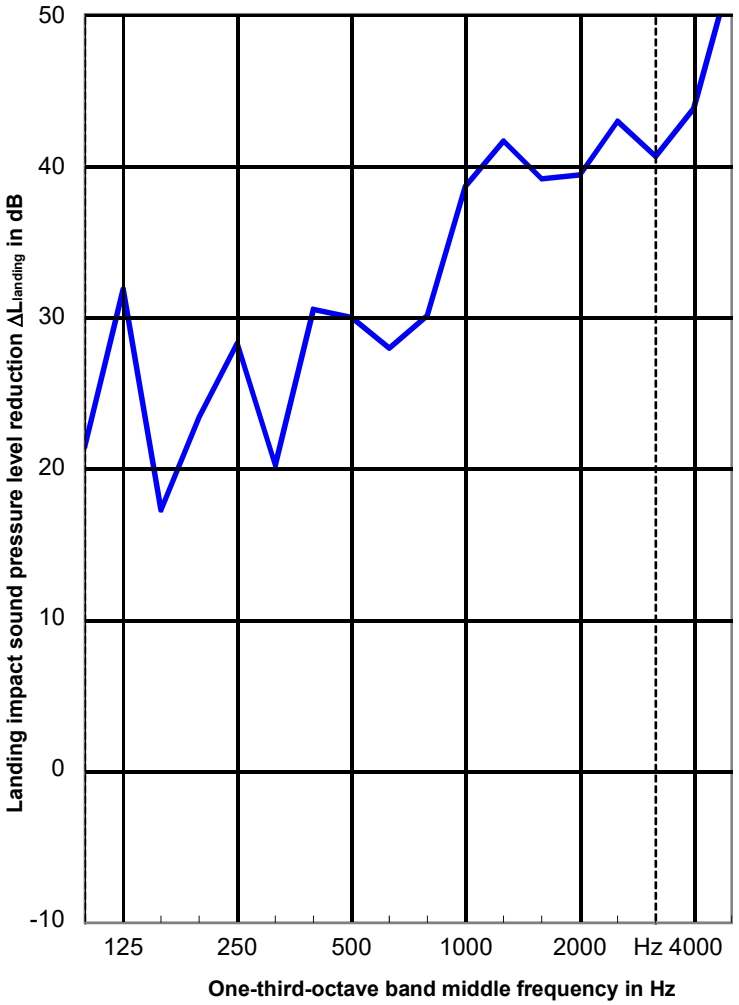
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 36 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 27 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.5
125	60.8	31.8
160	60.9	17.3
200	63.0	23.4
250	62.8	1) 28.3
315	65.7	20.2
400	65.8	1) 30.5
500	66.2	1) 30.0
630	68.1	27.9
800	68.2	30.1
1000	68.9	1) 38.6
1250	68.7	1) 41.6
1600	68.2	39.1
2000	67.4	39.4
2500	65.8	1) 42.9
3150	63.8	40.6
4000	65.1	43.8
5000	70.0	52.9



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
37.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

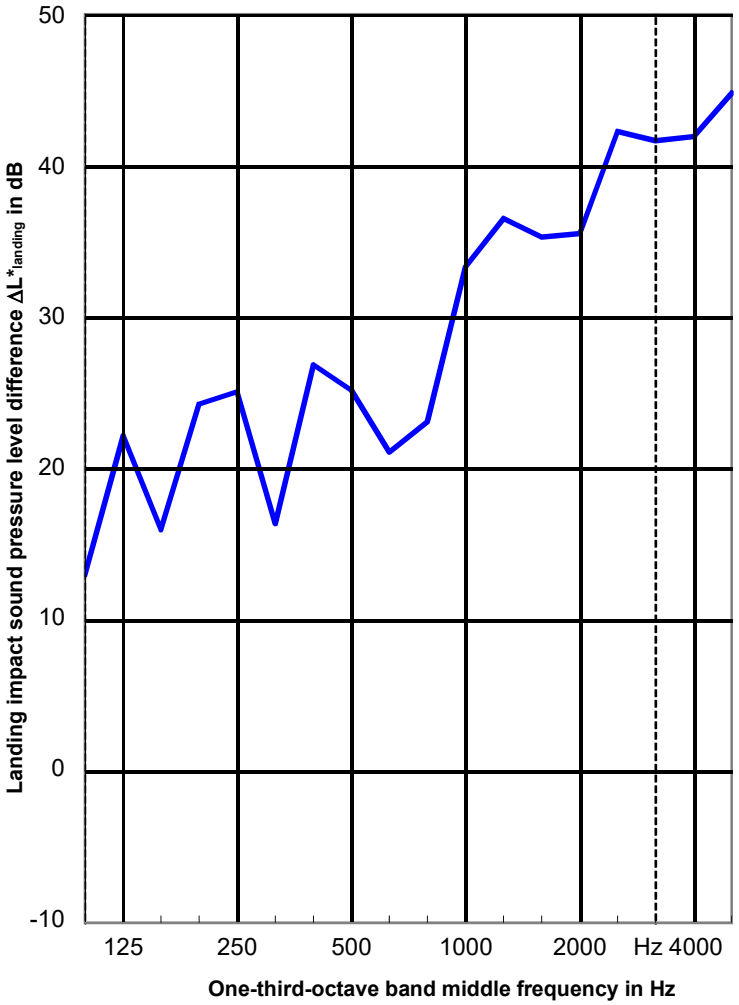
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 32 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	13.0
125	51.1	22.1
160	59.6	16.0
200	63.8	24.2
250	59.6	1) 25.1
315	61.8	16.4
400	62.1	1) 26.9
500	61.3	1) 25.1
630	61.2	21.1
800	61.2	23.1
1000	63.6	1) 33.3
1250	63.6	1) 36.5
1600	64.4	35.3
2000	63.5	35.5
2500	65.1	1) 42.2
3150	64.9	41.6
4000	63.3	41.9
5000	61.9	44.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 1.5 cm
37.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

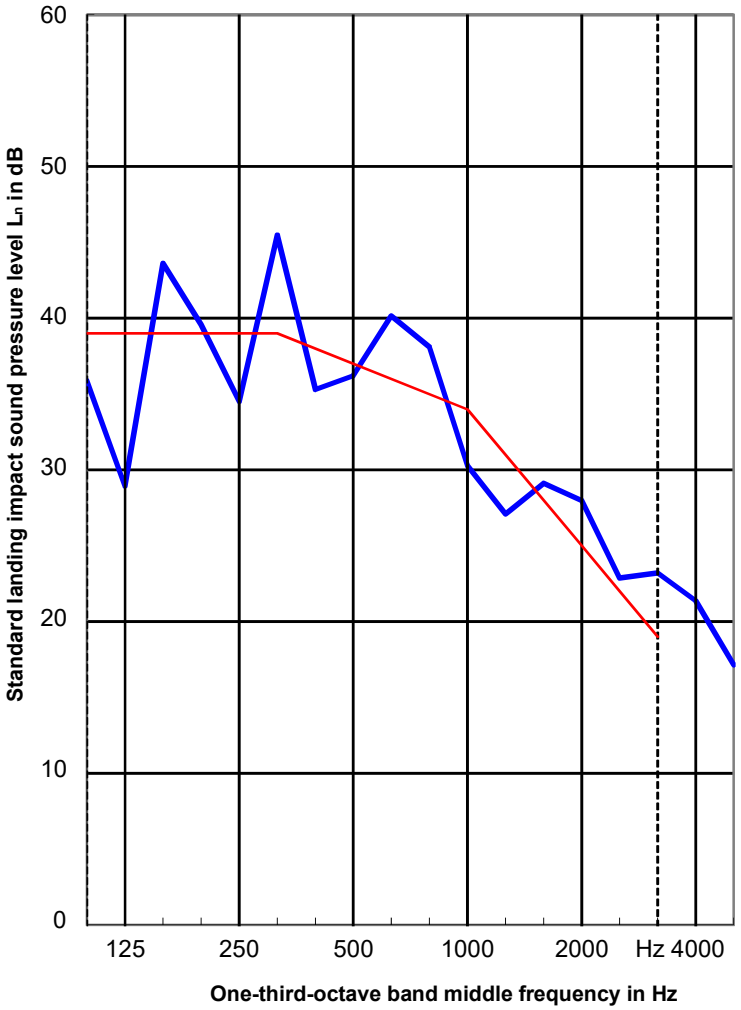
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 37 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 35 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	35.8
125	29.0
160	43.6
200	39.6
250	1) 34.5
315	45.5
400	1) 35.3
500	1) 36.2
630	40.2
800	38.1
1000	1) 30.3
1250	1) 27.1
1600	29.1
2000	28.0
2500	1) 22.9
3150	23.2
4000	21.4
5000	17.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

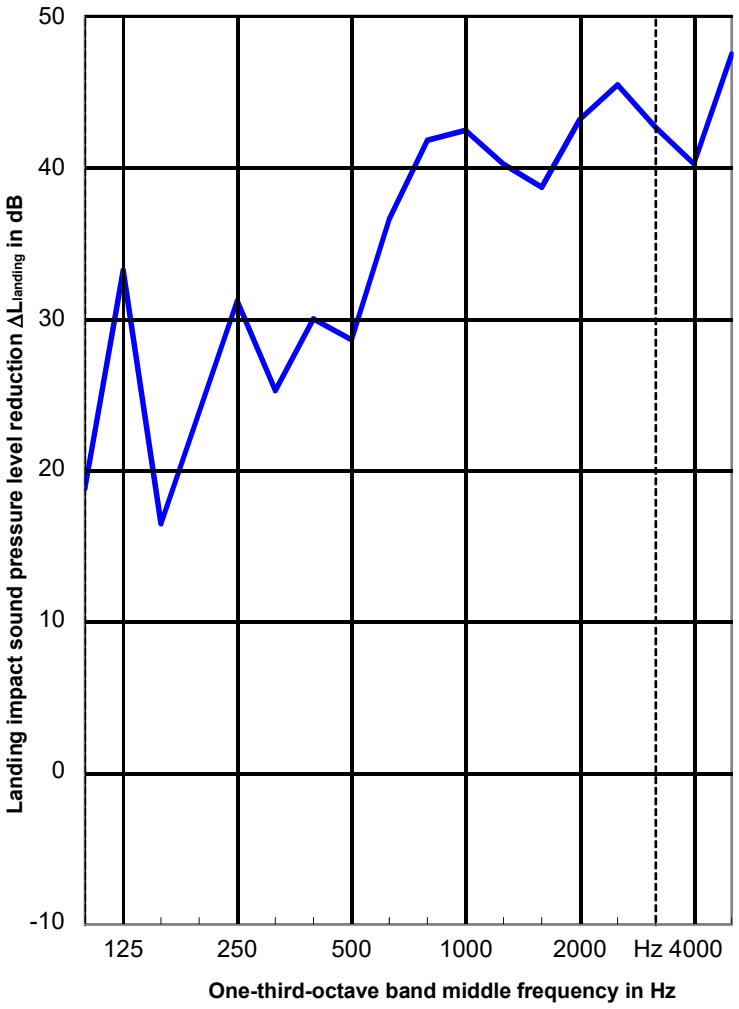
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 37 dB

$C_{I,\Delta,landing}$ = -10 dB

$\Delta L_{lin,landing}$ = 27 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	18.8
125	60.8	1) 33.2
160	60.9	16.5
200	63.0	23.8
250	62.8	1) 31.2
315	65.7	1) 25.3
400	65.8	1) 30.0
500	66.2	28.6
630	68.1	1) 36.6
800	68.2	1) 41.8
1000	68.9	1) 42.4
1250	68.7	1) 40.2
1600	68.2	38.7
2000	67.4	1) 43.2
2500	65.8	1) 45.4
3150	63.8	42.6
4000	65.1	40.2
5000	70.0	47.5



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

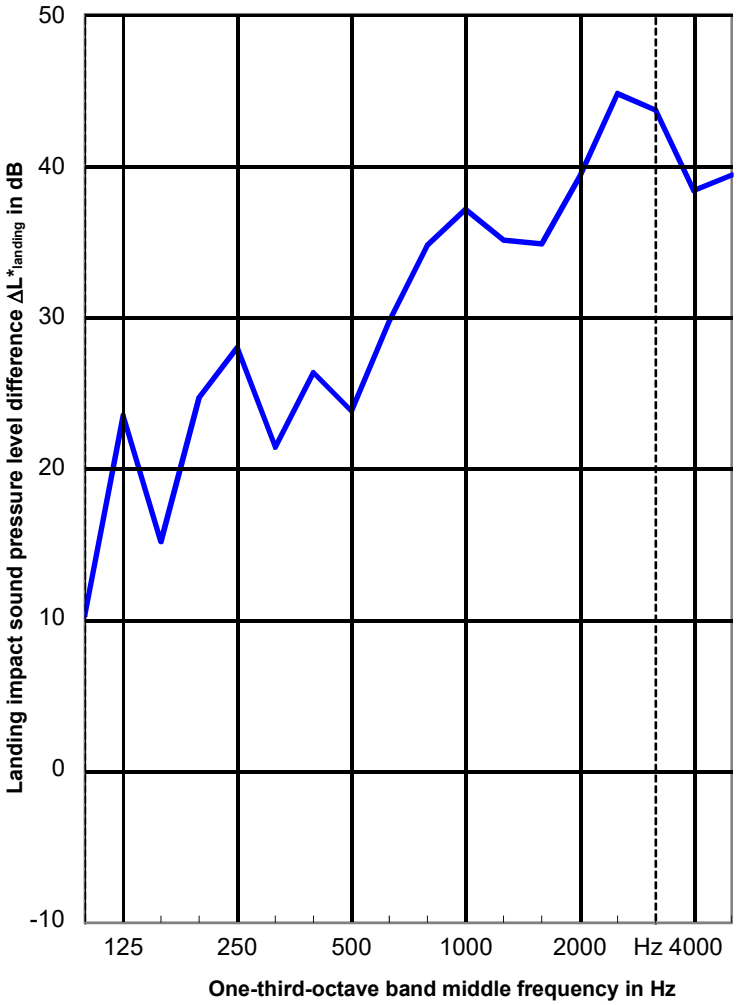
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 34 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 23 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	10.3
125	51.1	1) 23.5
160	59.6	15.2
200	63.8	24.7
250	59.6	1) 28.0
315	61.8	1) 21.4
400	62.1	1) 26.3
500	61.3	23.8
630	61.2	1) 29.7
800	61.2	1) 34.7
1000	63.6	1) 37.1
1250	63.6	1) 35.1
1600	64.4	34.8
2000	63.5	1) 39.3
2500	65.1	1) 44.8
3150	64.9	43.7
4000	63.3	38.4
5000	61.9	39.4



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

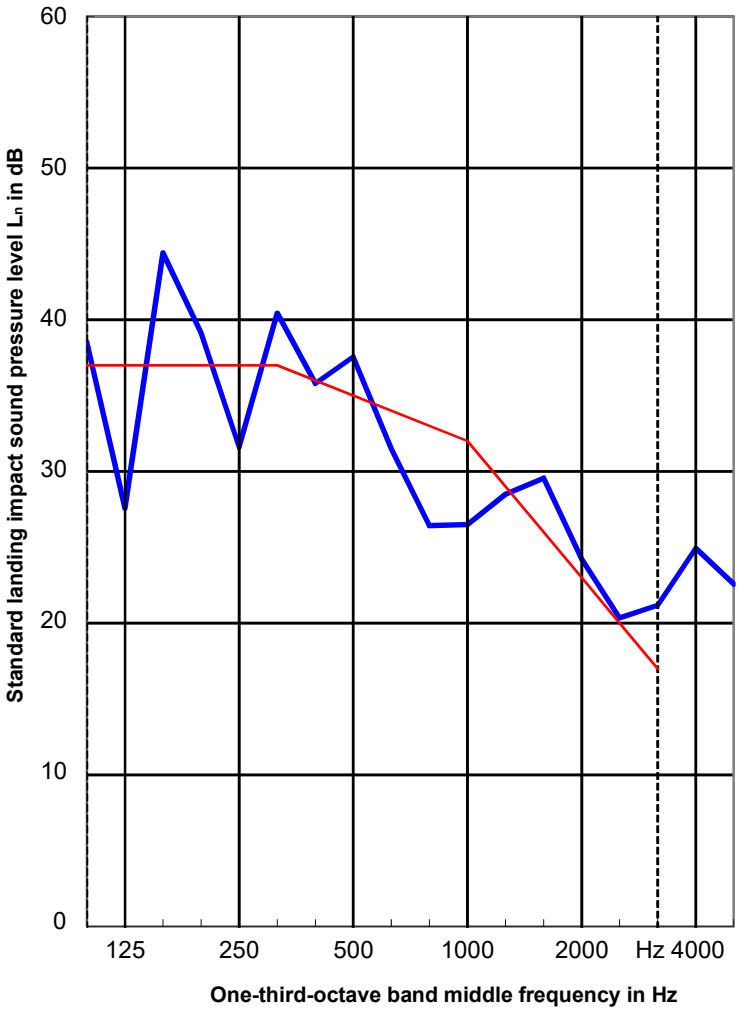
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 35 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 33 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	38.5
125	1) 27.6
160	44.4
200	39.1
250	1) 31.6
315	1) 40.4
400	1) 35.8
500	37.6
630	1) 31.5
800	1) 26.4
1000	1) 26.5
1250	1) 28.5
1600	29.6
2000	1) 24.2
2500	1) 20.4
3150	21.2
4000	24.9
5000	22.6



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
10.3 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

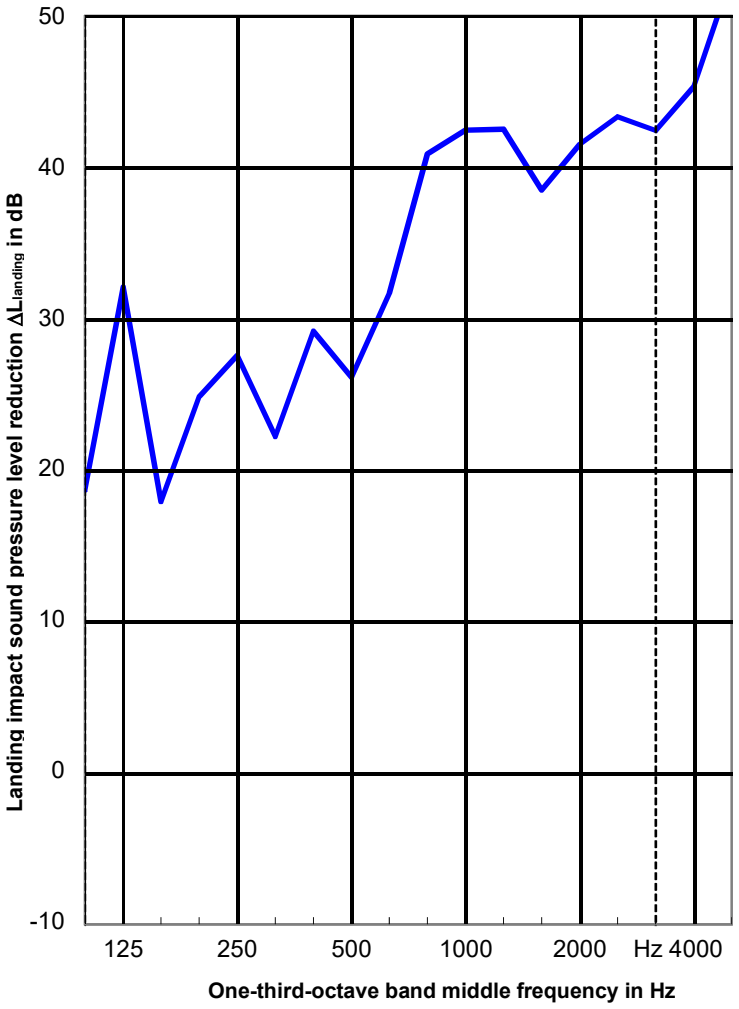
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 36 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 27 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	18.7
125	60.8	32.1
160	60.9	17.9
200	63.0	24.8
250	62.8	1) 27.6
315	65.7	22.2
400	65.8	1) 29.2
500	66.2	26.1
630	68.1	31.7
800	68.2	1) 40.9
1000	68.9	1) 42.5
1250	68.7	1) 42.5
1600	68.2	38.5
2000	67.4	1) 41.5
2500	65.8	1) 43.3
3150	63.8	42.4
4000	65.1	45.3
5000	70.0	52.7



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
10.3 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

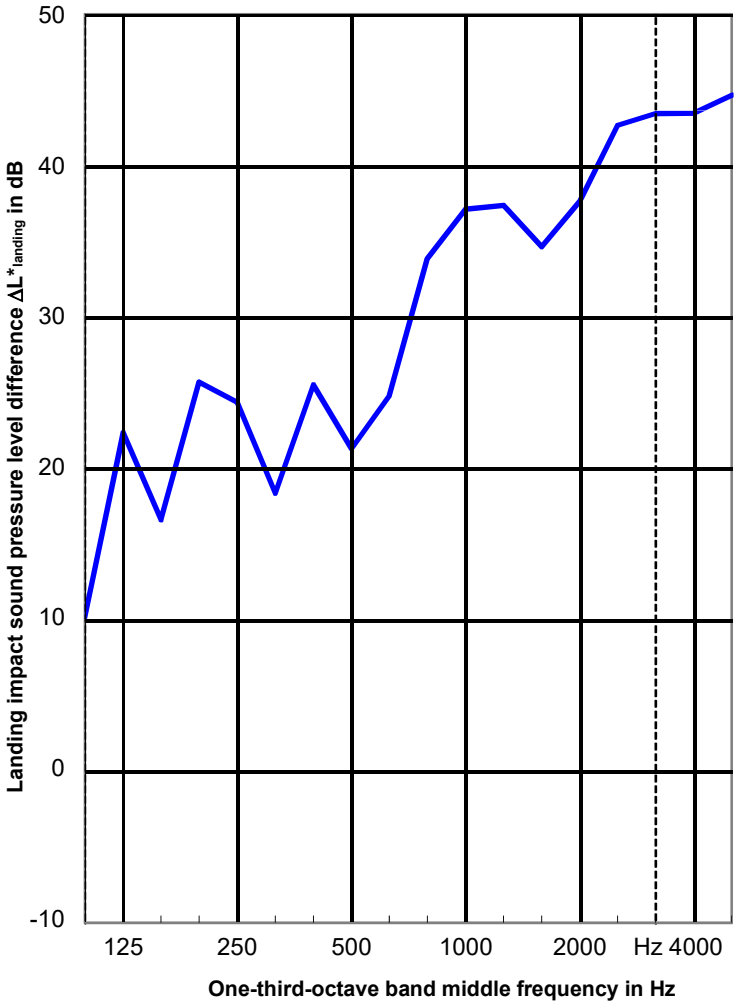
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 33 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	10.2
125	51.1	22.4
160	59.6	16.6
200	63.8	25.7
250	59.6	1) 24.4
315	61.8	18.4
400	62.1	1) 25.5
500	61.3	21.3
630	61.2	24.8
800	61.2	1) 33.8
1000	63.6	1) 37.1
1250	63.6	1) 37.4
1600	64.4	34.6
2000	63.5	1) 37.6
2500	65.1	1) 42.6
3150	64.9	43.4
4000	63.3	43.5
5000	61.9	44.6



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
10.3 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

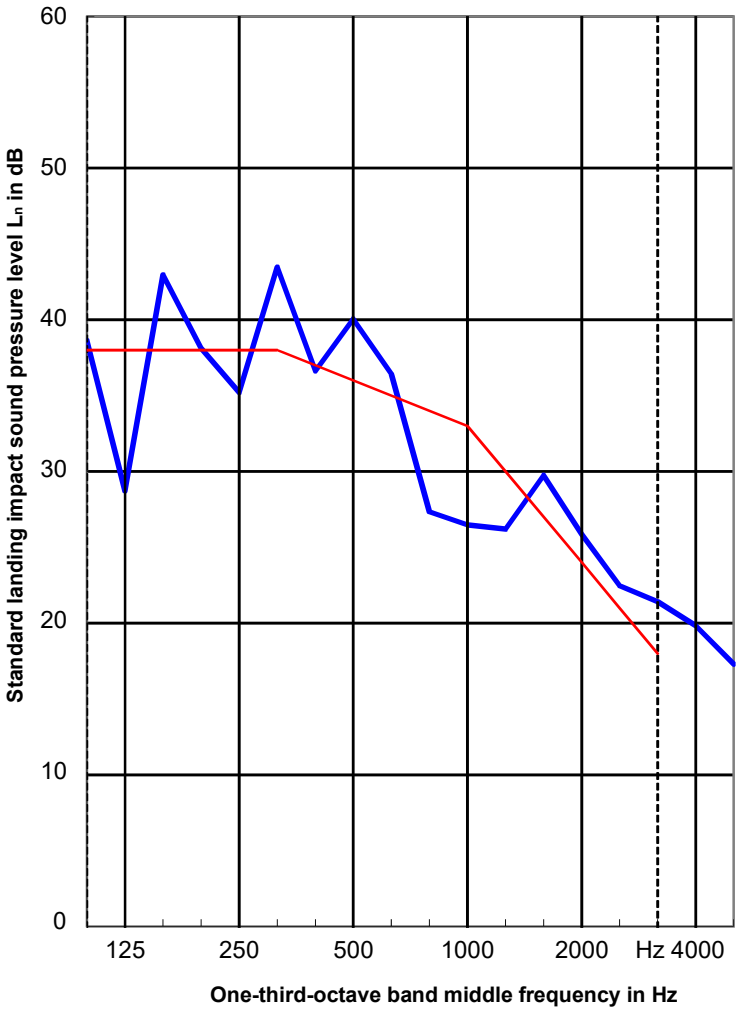
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 36 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 34 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	38.6
125	28.7
160	43.0
200	38.1
250	1) 35.2
315	43.5
400	1) 36.6
500	40.0
630	36.4
800	1) 27.3
1000	1) 26.5
1250	1) 26.2
1600	29.8
2000	1) 25.9
2500	1) 22.5
3150	21.4
4000	19.8
5000	17.3



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
20.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

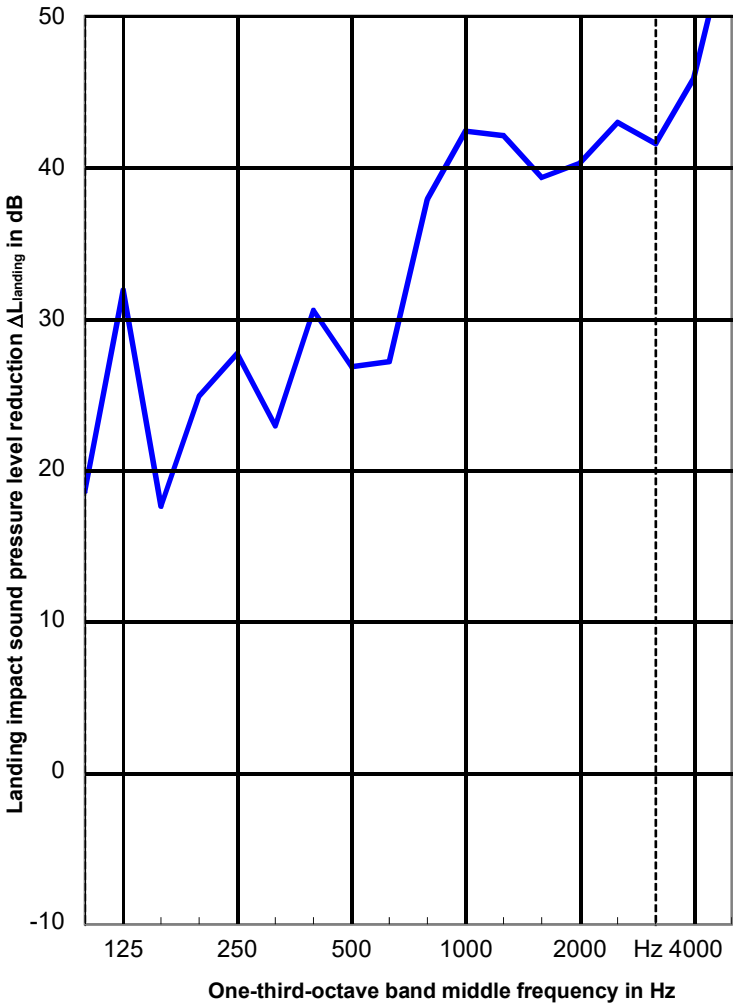
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 36 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 27 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	18.6
125	60.8	31.9
160	60.9	17.6
200	63.0	24.9
250	62.8	1) 27.7
315	65.7	22.9
400	65.8	1) 30.5
500	66.2	26.8
630	68.1	27.2
800	68.2	1) 37.9
1000	68.9	1) 42.4
1250	68.7	1) 42.1
1600	68.2	39.3
2000	67.4	40.3
2500	65.8	1) 42.9
3150	63.8	41.5
4000	65.1	45.9
5000	70.0	56.2



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
20.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

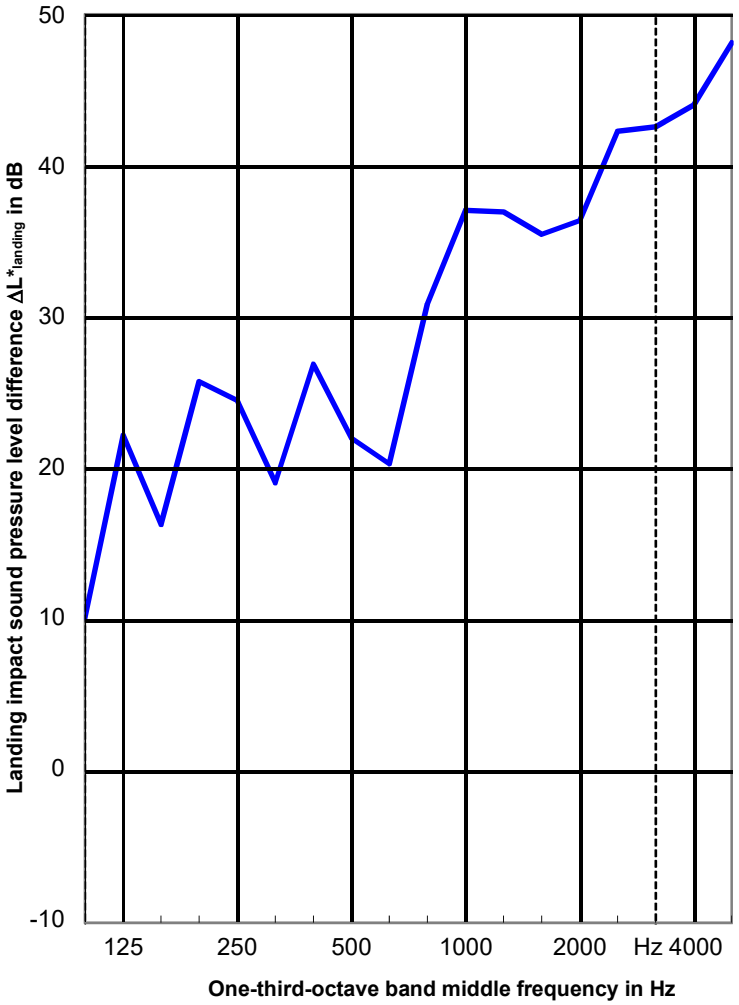
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 32 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 22 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	10.1
125	51.1	22.2
160	59.6	16.3
200	63.8	25.7
250	59.6	1) 24.5
315	61.8	19.1
400	62.1	1) 26.9
500	61.3	22.0
630	61.2	20.3
800	61.2	1) 30.9
1000	63.6	1) 37.0
1250	63.6	1) 37.0
1600	64.4	35.5
2000	63.5	36.4
2500	65.1	1) 42.3
3150	64.9	42.6
4000	63.3	44.0
5000	61.9	48.1



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
20.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

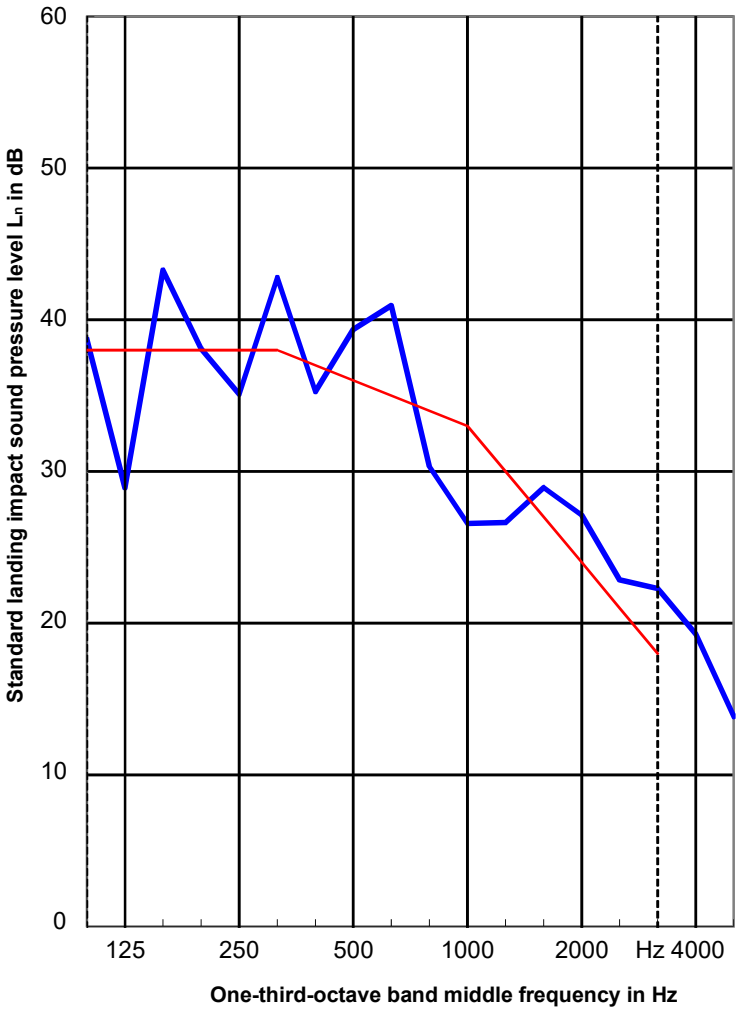
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 36 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 34 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	38.7
125	28.9
160	43.3
200	38.1
250	1) 35.1
315	42.8
400	1) 35.3
500	39.3
630	40.9
800	1) 30.3
1000	1) 26.6
1250	1) 26.6
1600	28.9
2000	27.1
2500	1) 22.8
3150	22.3
4000	19.3
5000	13.8



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
30.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

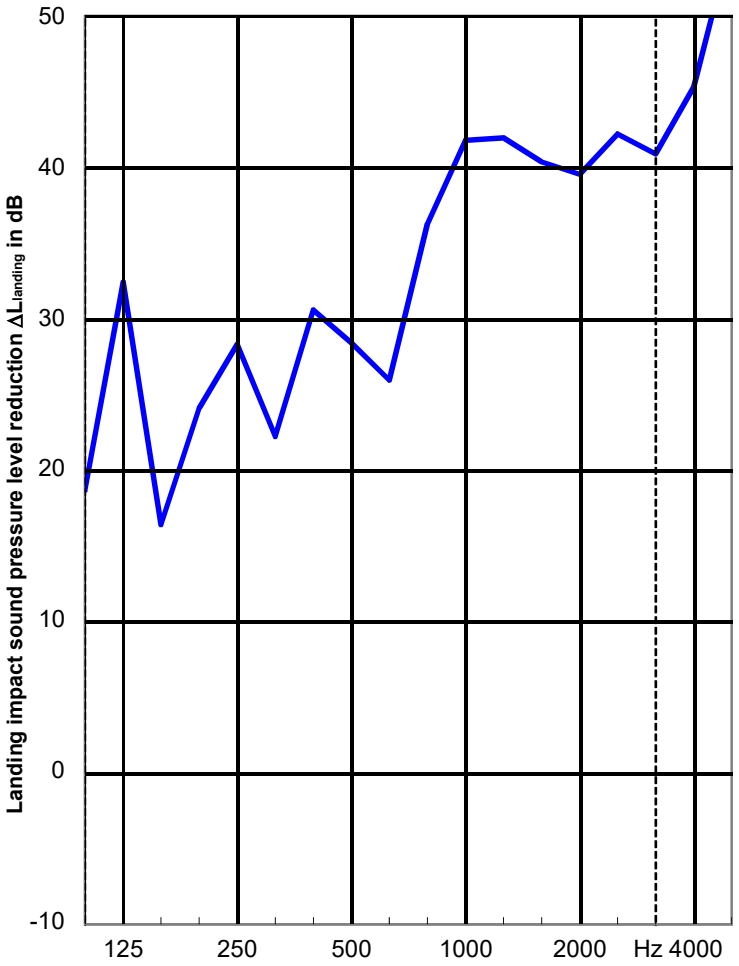
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 35 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 26 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	18.7
125	60.8	32.4
160	60.9	16.4
200	63.0	24.1
250	62.8	1) 28.3
315	65.7	22.2
400	65.8	1) 30.6
500	66.2	28.4
630	68.1	25.9
800	68.2	1) 36.2
1000	68.9	1) 41.8
1250	68.7	1) 41.9
1600	68.2	1) 40.3
2000	67.4	39.5
2500	65.8	42.2
3150	63.8	40.9
4000	65.1	45.3
5000	70.0	55.1



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
30.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

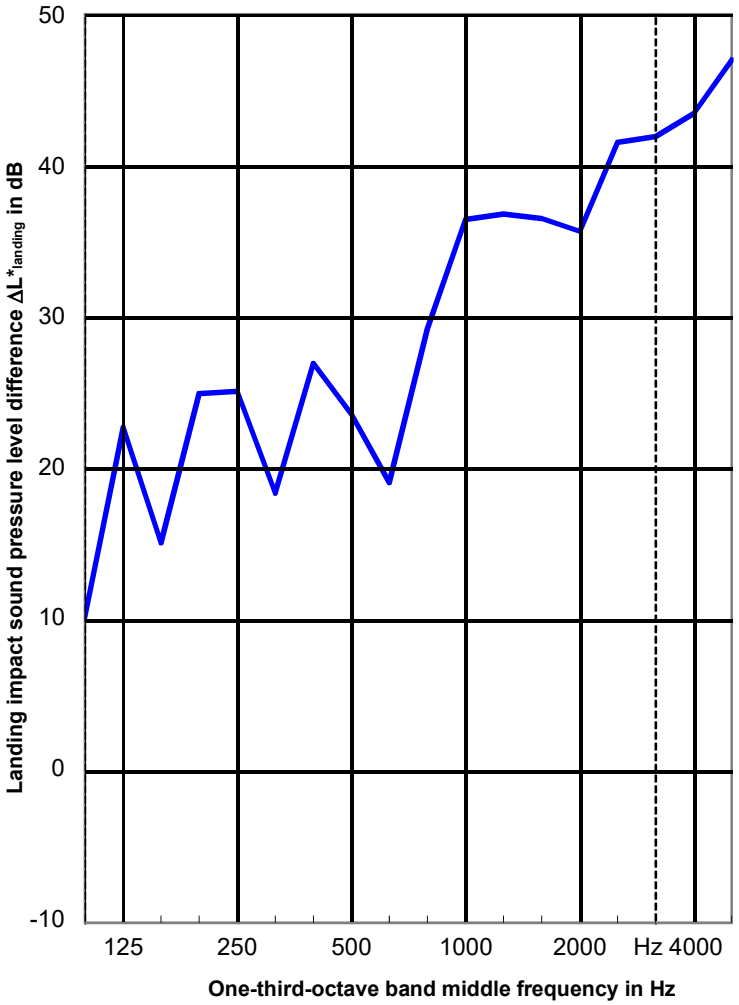
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 32 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	10.2
125	51.1	22.7
160	59.6	15.1
200	63.8	24.9
250	59.6	1) 25.1
315	61.8	18.4
400	62.1	1) 26.9
500	61.3	23.6
630	61.2	19.1
800	61.2	1) 29.2
1000	63.6	1) 36.4
1250	63.6	1) 36.8
1600	64.4	1) 36.5
2000	63.5	35.7
2500	65.1	41.5
3150	64.9	41.9
4000	63.3	43.4
5000	61.9	47.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 5 cm
30.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

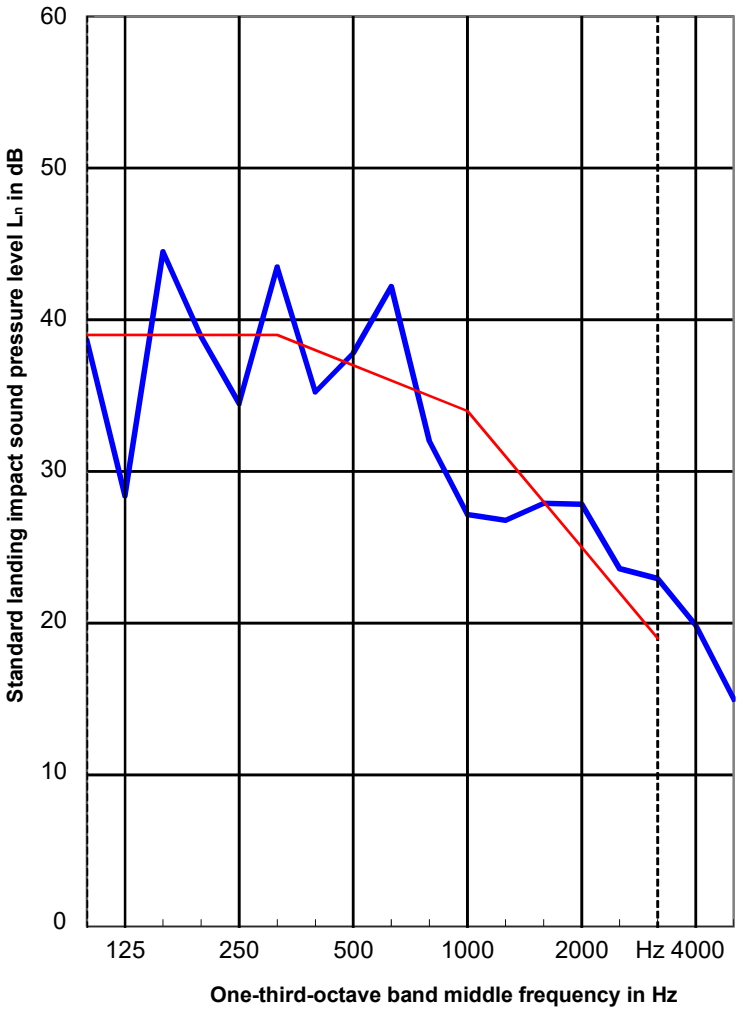
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 17/03/2021**
Temperature: 20.6 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 37 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 35 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	38.6
125	28.4
160	44.5
200	38.9
250	1) 34.5
315	43.5
400	1) 35.2
500	37.8
630	42.2
800	1) 32.0
1000	1) 27.2
1250	1) 26.8
1600	1) 27.9
2000	27.8
2500	23.6
3150	22.9
4000	19.9
5000	15.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

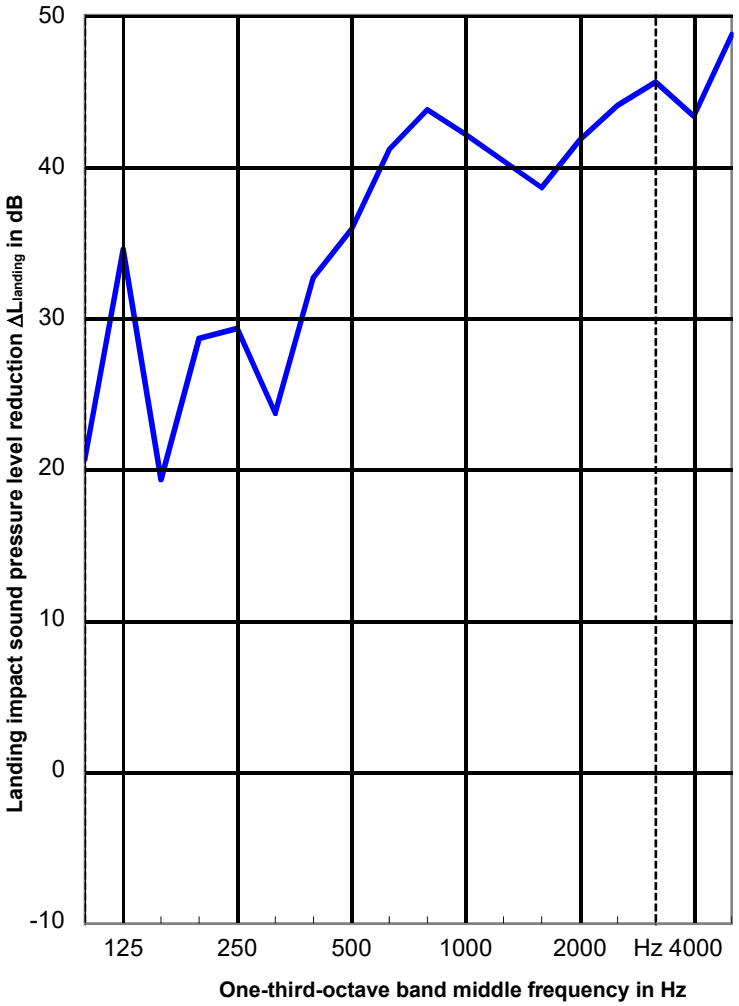
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 38 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 29 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	20.7
125	60.8	1) 34.5
160	60.9	19.3
200	63.0	1) 28.6
250	62.8	1) 29.3
315	65.7	23.7
400	65.8	1) 32.7
500	66.2	1) 35.8
630	68.1	1) 41.1
800	68.2	1) 43.7
1000	68.9	1) 42.1
1250	68.7	1) 40.4
1600	68.2	38.6
2000	67.4	1) 41.7
2500	65.8	1) 44.0
3150	63.8	1) 45.6
4000	65.1	43.3
5000	70.0	48.7



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

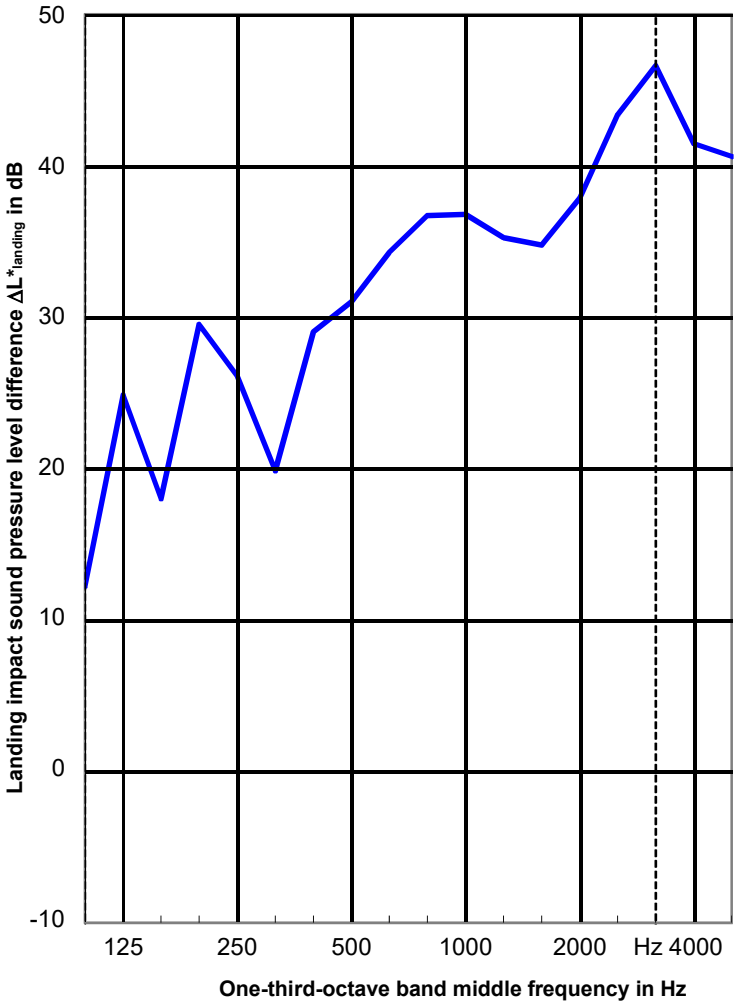
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 35 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 24 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	12.2
125	51.1	1) 24.8
160	59.6	18.0
200	63.8	1) 29.5
250	59.6	1) 26.1
315	61.8	19.8
400	62.1	1) 29.0
500	61.3	1) 31.0
630	61.2	1) 34.3
800	61.2	1) 36.7
1000	63.6	1) 36.8
1250	63.6	1) 35.2
1600	64.4	34.8
2000	63.5	1) 37.9
2500	65.1	1) 43.4
3150	64.9	1) 46.6
4000	63.3	41.4
5000	61.9	40.6



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

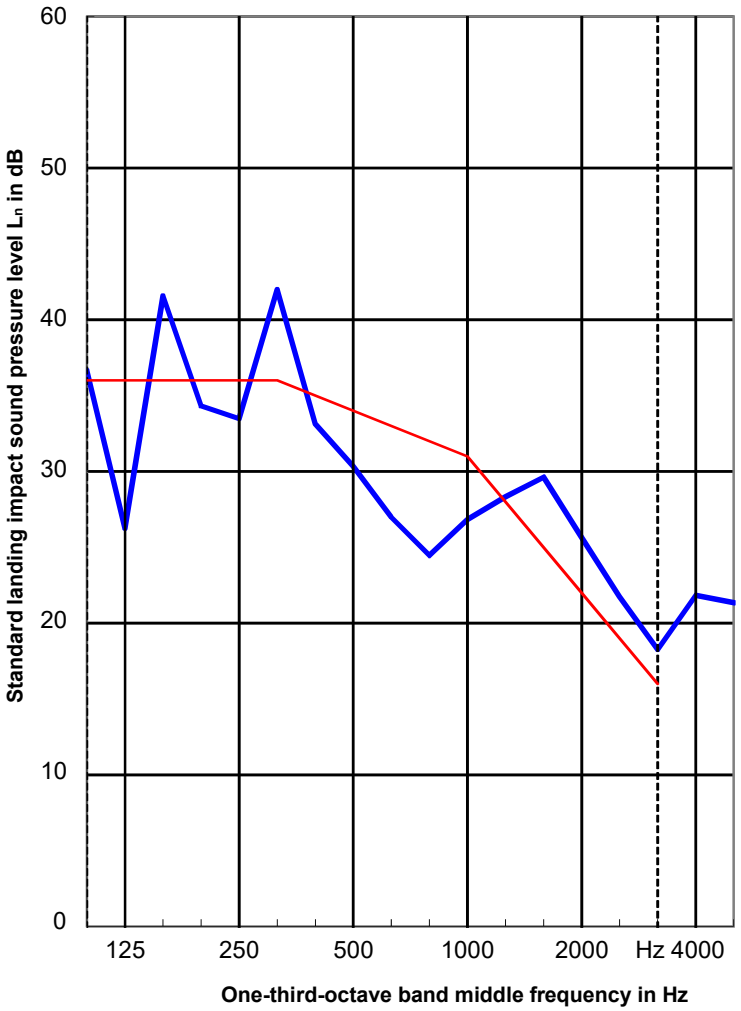
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 34 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 32 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	36.6
125	1) 26.3
160	41.6
200	1) 34.3
250	1) 33.5
315	42.0
400	1) 33.1
500	1) 30.3
630	1) 27.0
800	1) 24.5
1000	1) 26.8
1250	1) 28.3
1600	29.6
2000	1) 25.6
2500	1) 21.7
3150	1) 18.3
4000	21.8
5000	21.3



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
5.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

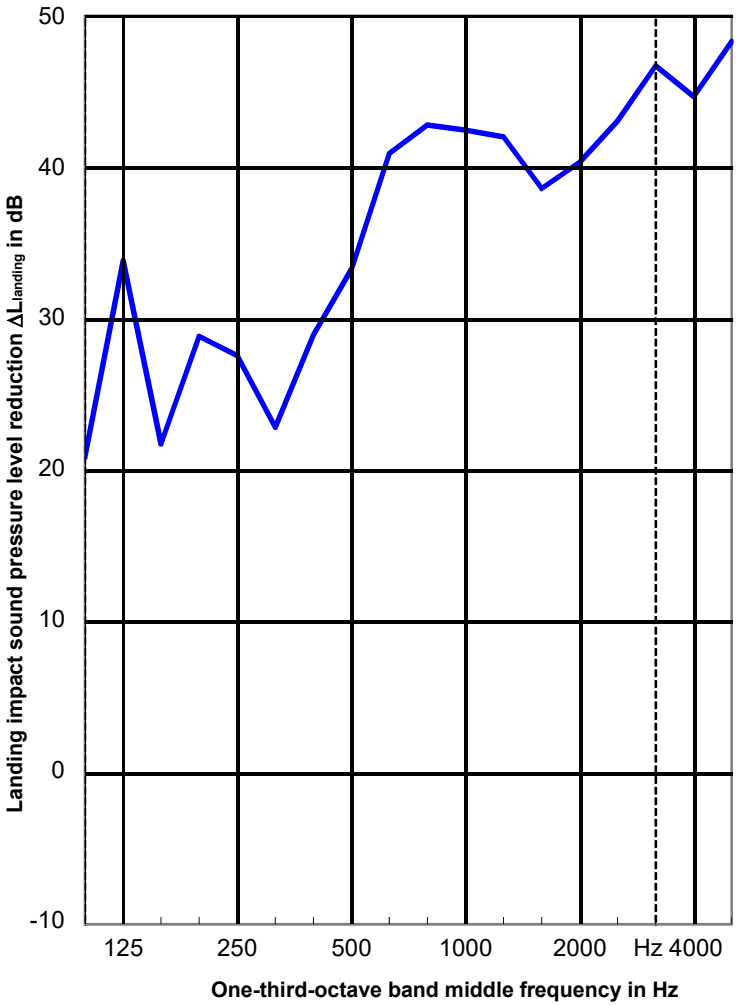
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 38 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 29 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	20.9
125	60.8	1) 33.8
160	60.9	1) 21.7
200	63.0	1) 28.8
250	62.8	1) 27.6
315	65.7	22.8
400	65.8	1) 28.9
500	66.2	1) 33.3
630	68.1	1) 40.9
800	68.2	1) 42.8
1000	68.9	1) 42.4
1250	68.7	1) 42.0
1600	68.2	38.6
2000	67.4	40.3
2500	65.8	1) 43.1
3150	63.8	1) 46.7
4000	65.1	44.7
5000	70.0	48.3



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
5.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

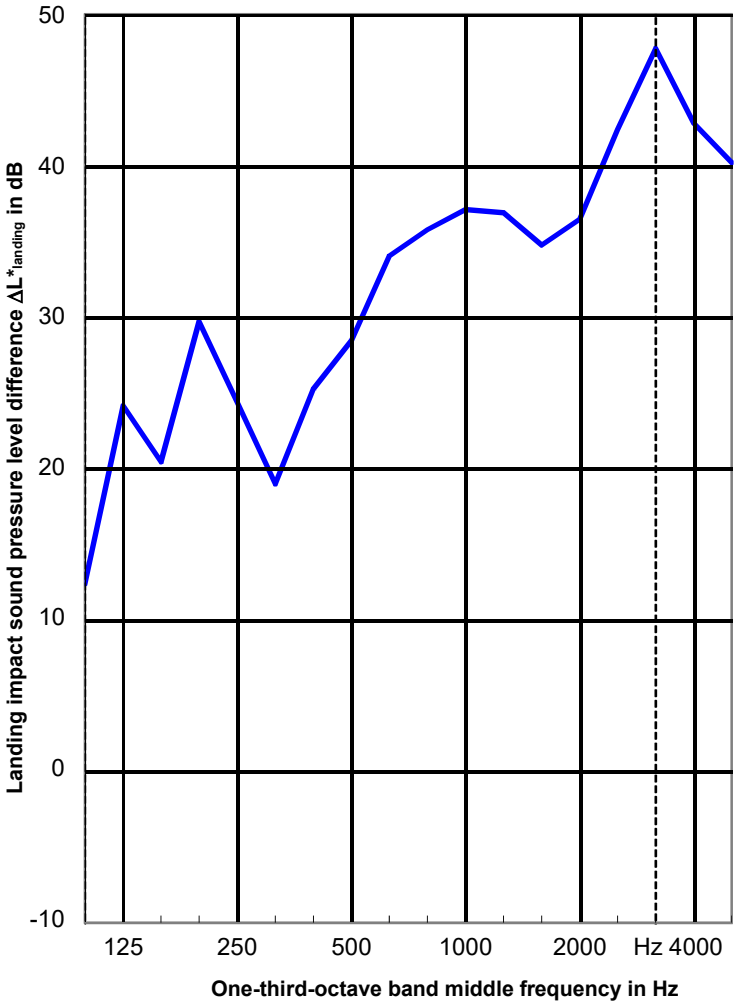
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 35 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 24 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	12.4
125	51.1	1) 24.1
160	59.6	1) 20.4
200	63.8	1) 29.7
250	59.6	1) 24.4
315	61.8	19.0
400	62.1	1) 25.3
500	61.3	1) 28.4
630	61.2	1) 34.0
800	61.2	1) 35.8
1000	63.6	1) 37.1
1250	63.6	1) 36.9
1600	64.4	34.8
2000	63.5	36.5
2500	65.1	1) 42.4
3150	64.9	1) 47.7
4000	63.3	42.8
5000	61.9	40.2



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
5.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

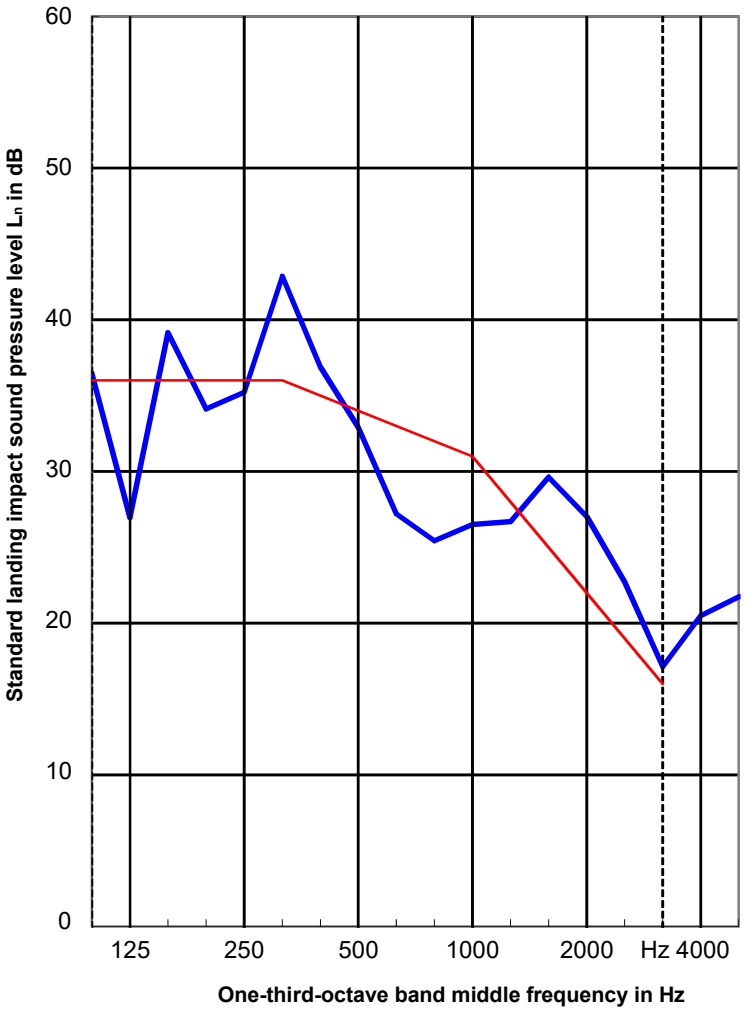
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 34 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 32 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	36.4
125	1) 27.0
160	1) 39.1
200	1) 34.1
250	1) 35.2
315	42.9
400	1) 36.9
500	1) 32.9
630	1) 27.2
800	1) 25.4
1000	1) 26.5
1250	1) 26.7
1600	29.6
2000	27.0
2500	1) 22.7
3150	1) 17.1
4000	20.5
5000	21.7



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
11.5 kN load in addition to dead weight (12.55 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

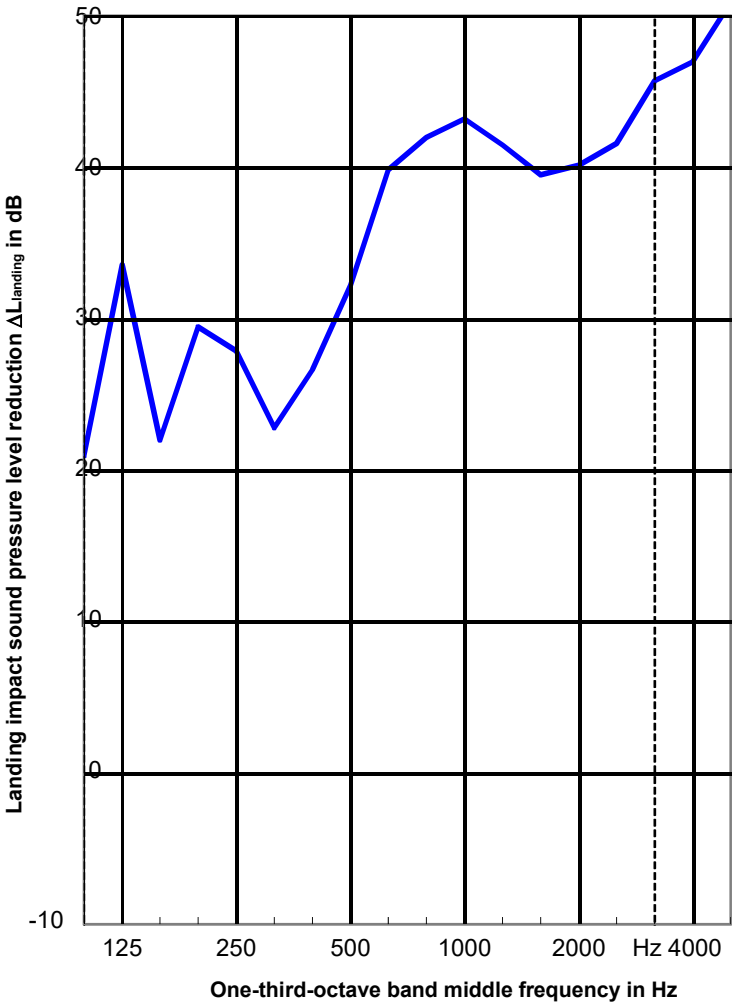
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 38 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 29 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	20.9
125	60.8	1) 33.5
160	60.9	1) 22.0
200	63.0	1) 29.4
250	62.8	1) 27.9
315	65.7	22.8
400	65.8	26.6
500	66.2	1) 32.2
630	68.1	1) 39.8
800	68.2	1) 42.0
1000	68.9	1) 43.2
1250	68.7	1) 41.5
1600	68.2	39.5
2000	67.4	40.1
2500	65.8	41.5
3150	63.8	1) 45.7
4000	65.1	46.9
5000	70.0	50.9



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
11.5 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

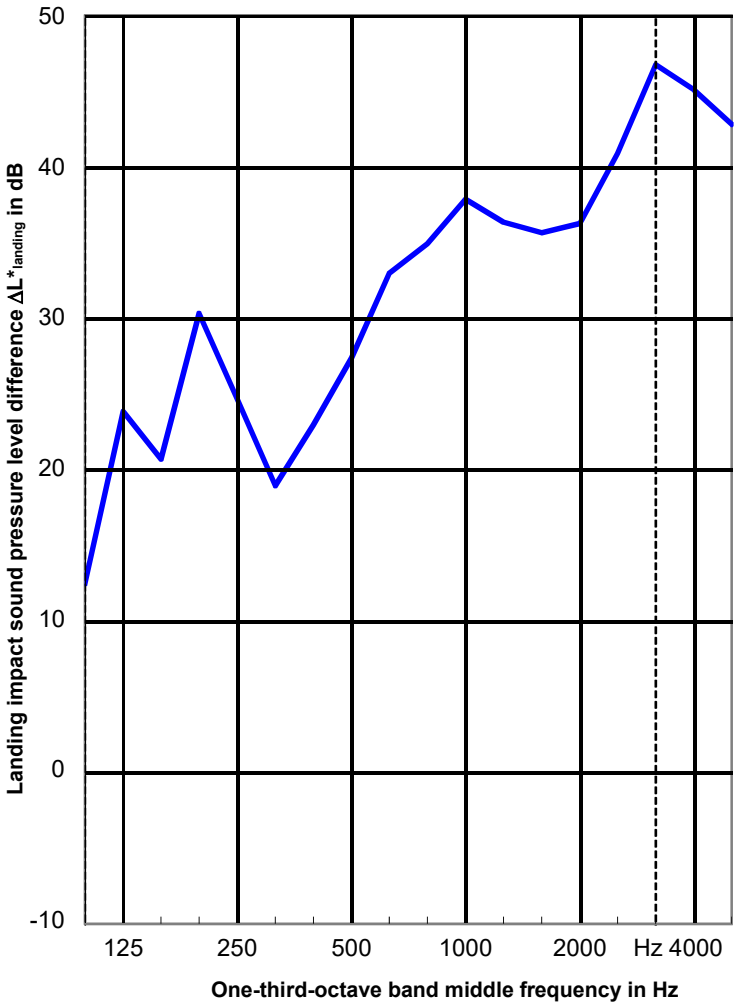
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 35 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 24 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	12.5
125	51.1	1) 23.8
160	59.6	1) 20.7
200	63.8	1) 30.3
250	59.6	1) 24.7
315	61.8	18.9
400	62.1	23.0
500	61.3	1) 27.4
630	61.2	1) 33.0
800	61.2	1) 34.9
1000	63.6	1) 37.9
1250	63.6	1) 36.3
1600	64.4	35.6
2000	63.5	36.2
2500	65.1	40.9
3150	64.9	1) 46.7
4000	63.3	45.1
5000	61.9	42.8



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
11.5 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

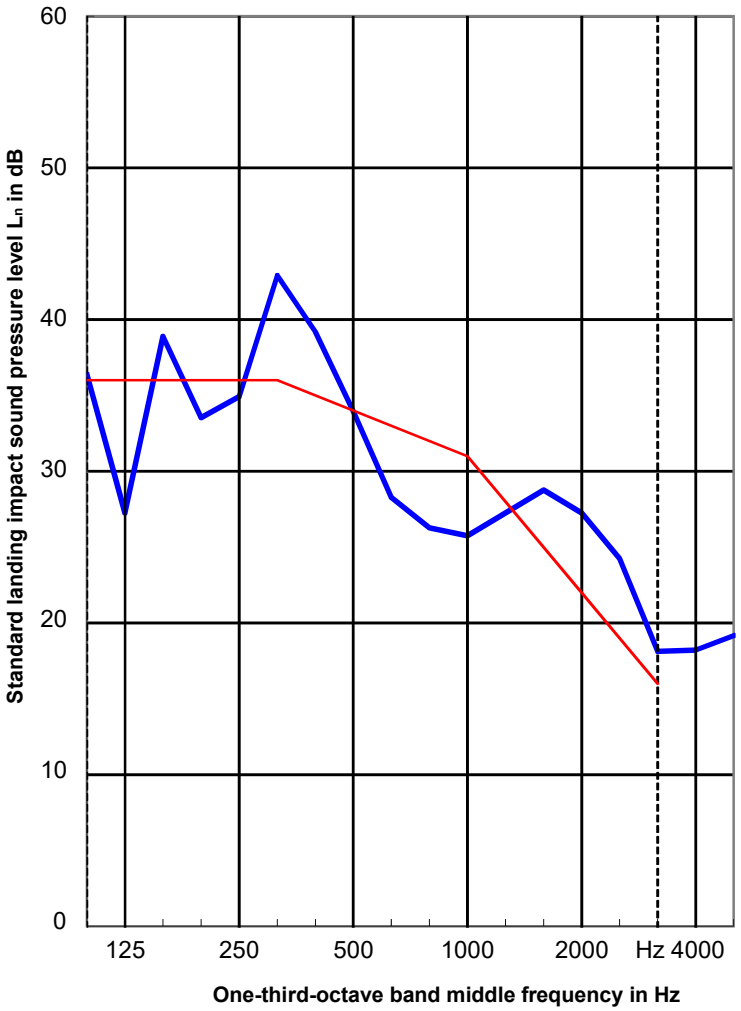
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 34 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 32 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	36.4
125	1) 27.3
160	1) 38.9
200	1) 33.5
250	1) 34.9
315	42.9
400	39.2
500	1) 34.0
630	1) 28.3
800	1) 26.3
1000	1) 25.7
1250	1) 27.2
1600	28.7
2000	27.2
2500	24.2
3150	1) 18.1
4000	18.2
5000	19.1



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
17.3 kN load in addition to dead weight (12.55 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

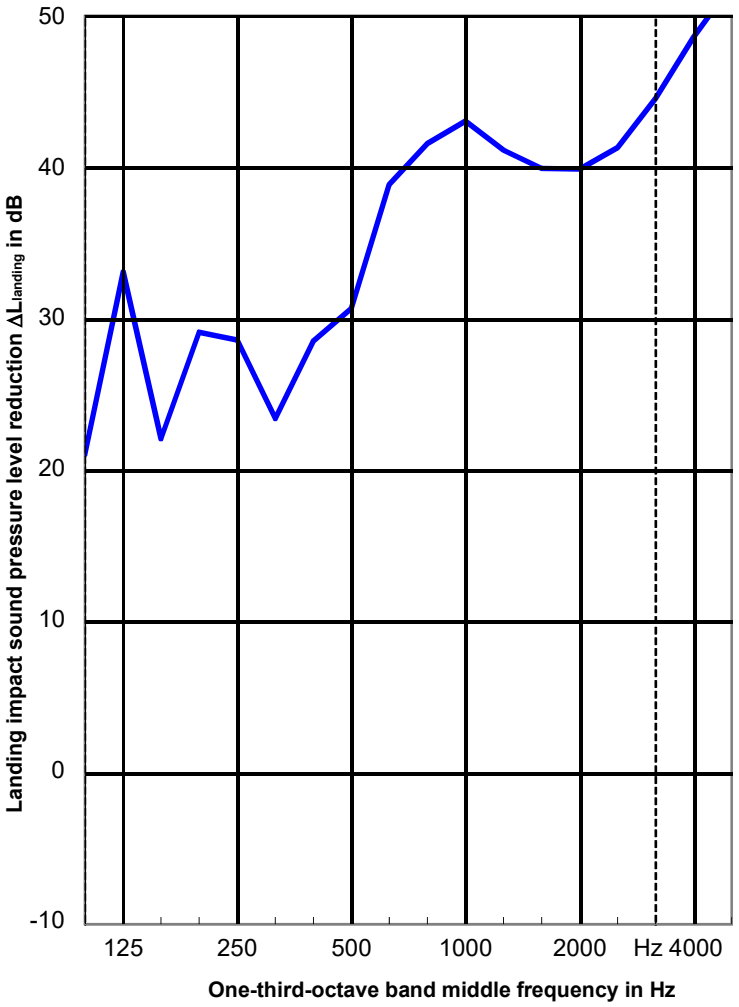
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 38 dB

$C_{I,\Delta,landing}$ = -8 dB

$\Delta L_{lin,landing}$ = 30 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	21.0
125	60.8	1) 33.1
160	60.9	1) 22.1
200	63.0	1) 29.1
250	62.8	1) 28.6
315	65.7	23.4
400	65.8	1) 28.5
500	66.2	1) 30.7
630	68.1	1) 38.8
800	68.2	1) 41.6
1000	68.9	1) 43.0
1250	68.7	1) 41.1
1600	68.2	39.9
2000	67.4	39.9
2500	65.8	41.3
3150	63.8	1) 44.5
4000	65.1	48.6
5000	70.0	52.0



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
17.3 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

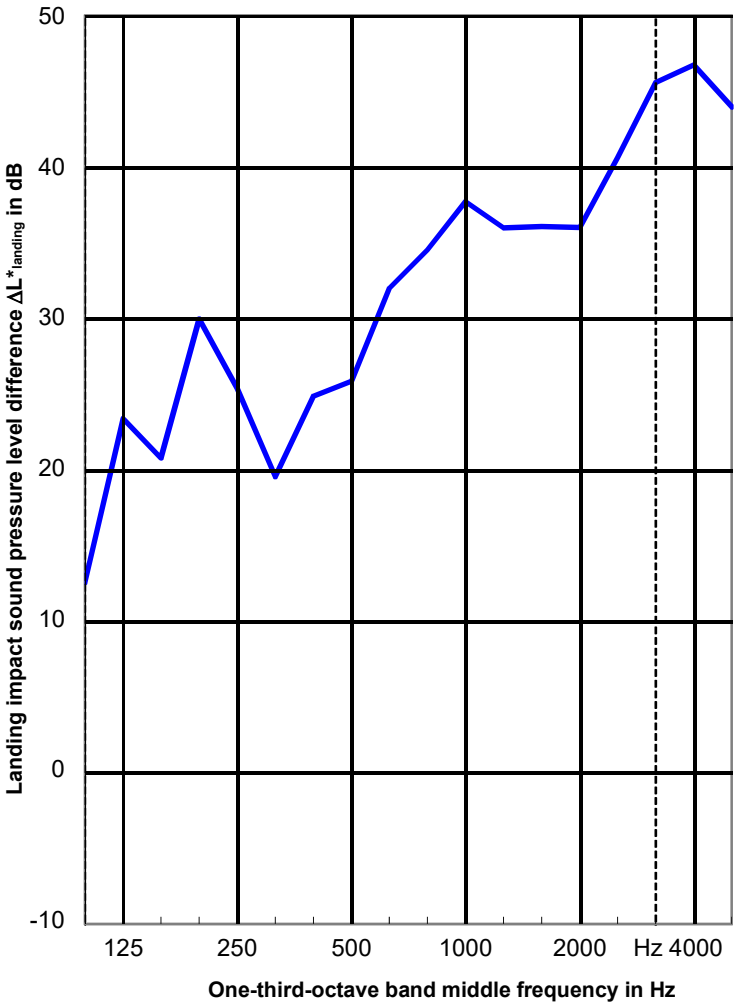
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 35 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 24 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	12.6
125	51.1	1) 23.4
160	59.6	1) 20.8
200	63.8	1) 30.0
250	59.6	1) 25.4
315	61.8	19.6
400	62.1	1) 24.9
500	61.3	1) 25.8
630	61.2	1) 32.0
800	61.2	1) 34.5
1000	63.6	1) 37.7
1250	63.6	1) 36.0
1600	64.4	36.1
2000	63.5	36.0
2500	65.1	40.6
3150	64.9	1) 45.6
4000	63.3	46.7
5000	61.9	44.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP with 20mm elastomer bearing, tested with gap spacing z = 10 cm
17.3 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line

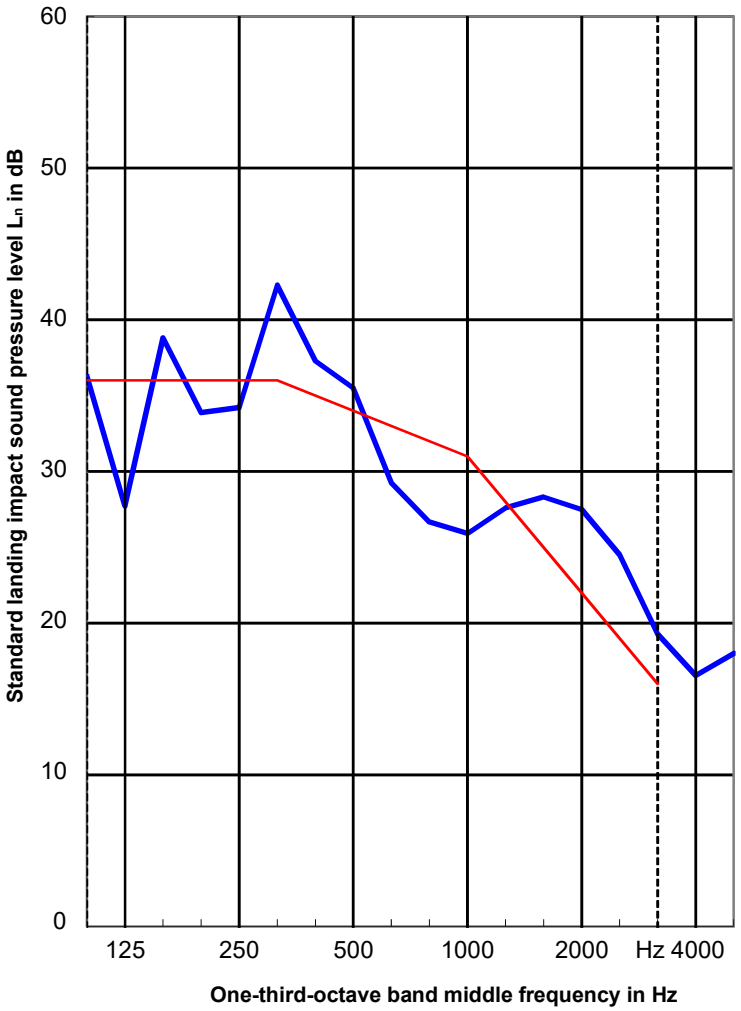
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 18/03/2021**
Temperature: 20.5 °C, relative humidity: 47%, air pressure: 968 hPa

$L_{n,w,landing}$ = 34 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 32 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	36.3
125	1) 27.7
160	1) 38.8
200	1) 33.9
250	1) 34.2
315	42.3
400	1) 37.3
500	1) 35.5
630	1) 29.3
800	1) 26.7
1000	1) 25.9
1250	1) 27.6
1600	28.3
2000	27.5
2500	24.5
3150	1) 19.3
4000	16.6
5000	18.0



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

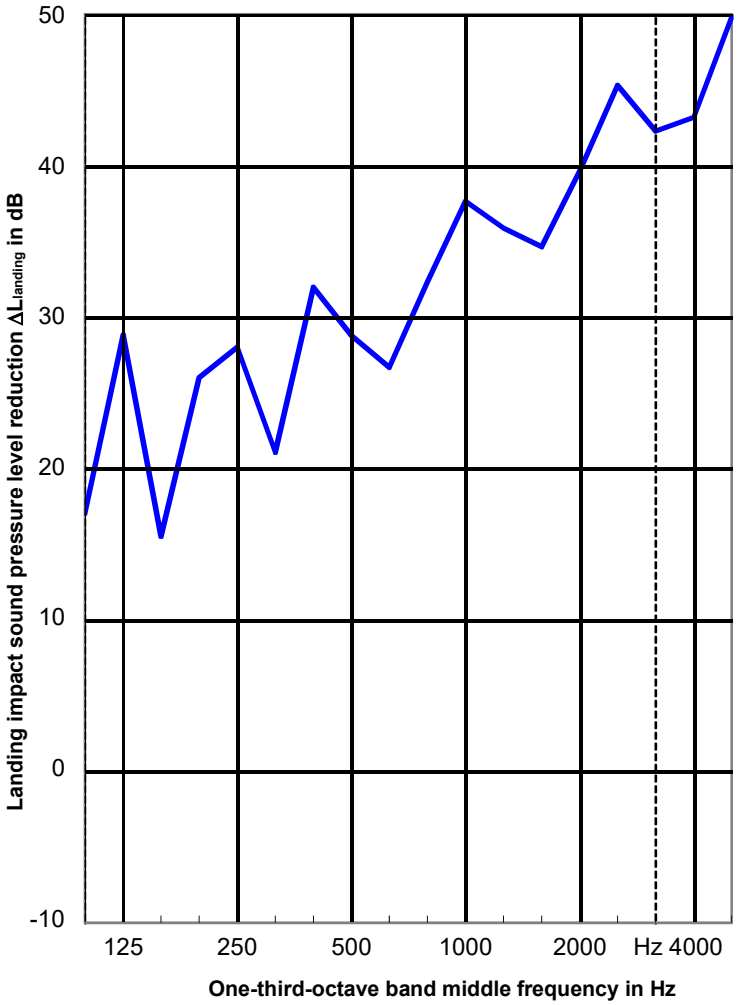
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 35 dB

$C_{I,\Delta,landing}$ = -10 dB

$\Delta L_{lin,landing}$ = 25 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	17.0
125	60.8	28.8
160	60.9	15.5
200	63.0	1) 26.0
250	62.8	1) 28.0
315	65.7	21.1
400	65.8	1) 32.0
500	66.2	1) 28.8
630	68.1	26.7
800	68.2	32.3
1000	68.9	1) 37.6
1250	68.7	35.9
1600	68.2	34.6
2000	67.4	39.7
2500	65.8	1) 45.3
3150	63.8	42.3
4000	65.1	43.2
5000	70.0	49.8



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

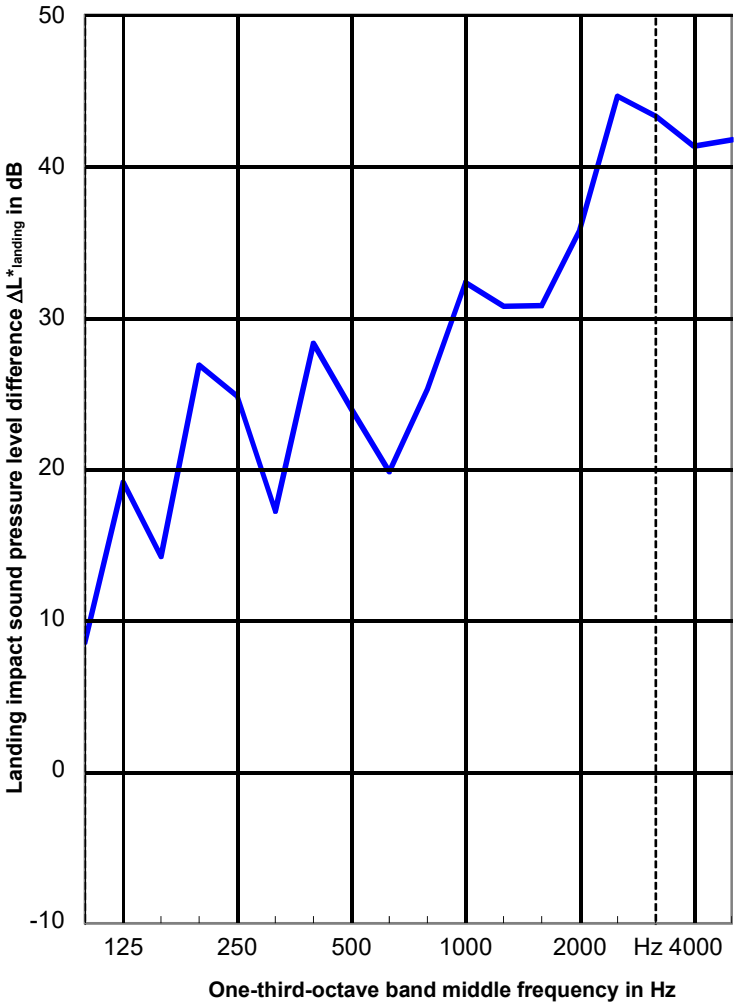
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 31 dB

$C^*_{I,\Delta,landing}$ = -11 dB

$\Delta L^*_{lin,landing}$ = 20 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	8.6
125	51.1	19.1
160	59.6	14.2
200	63.8	1) 26.9
250	59.6	1) 24.8
315	61.8	17.2
400	62.1	1) 28.3
500	61.3	1) 24.0
630	61.2	19.8
800	61.2	25.3
1000	63.6	1) 32.3
1250	63.6	30.7
1600	64.4	30.8
2000	63.5	35.8
2500	65.1	1) 44.6
3150	64.9	43.3
4000	63.3	41.3
5000	61.9	41.7



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
0 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

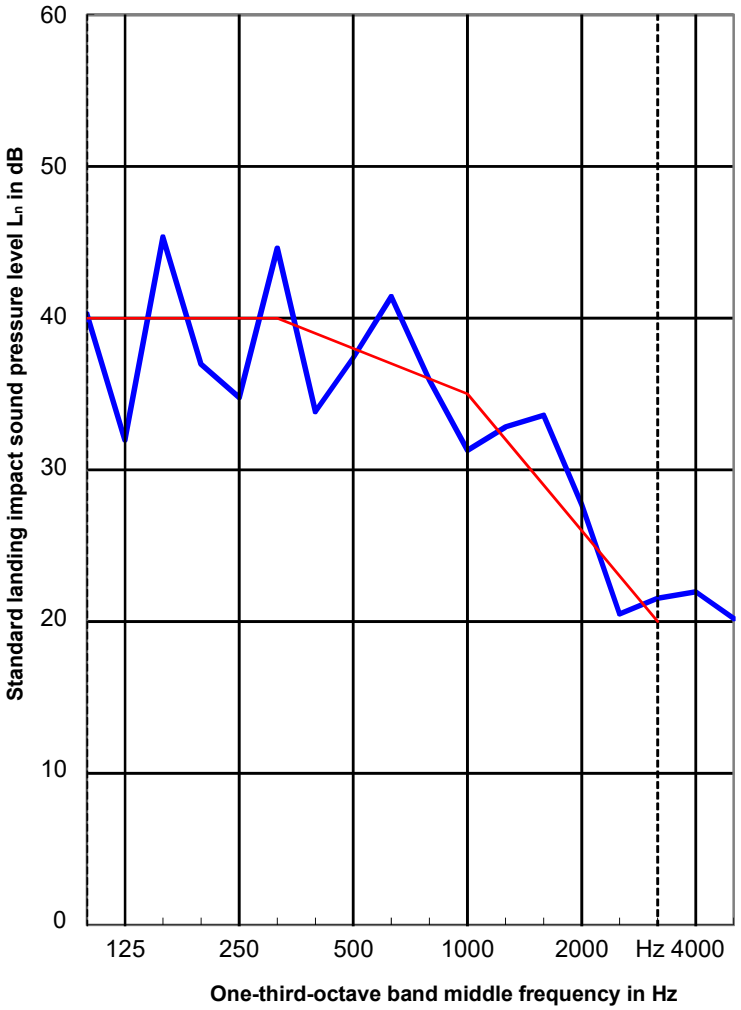
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$L_{n,w,landing}$ = 38 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 36 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	40.3
125	32.0
160	45.3
200	1) 37.0
250	1) 34.8
315	44.6
400	1) 33.8
500	1) 37.4
630	41.4
800	35.9
1000	1) 31.3
1250	32.8
1600	33.6
2000	27.7
2500	1) 20.5
3150	21.5
4000	22.0
5000	20.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation	EN ISO 717-2:2013
Measurement	EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source	Standard tapping machine
Receiving	One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
12.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

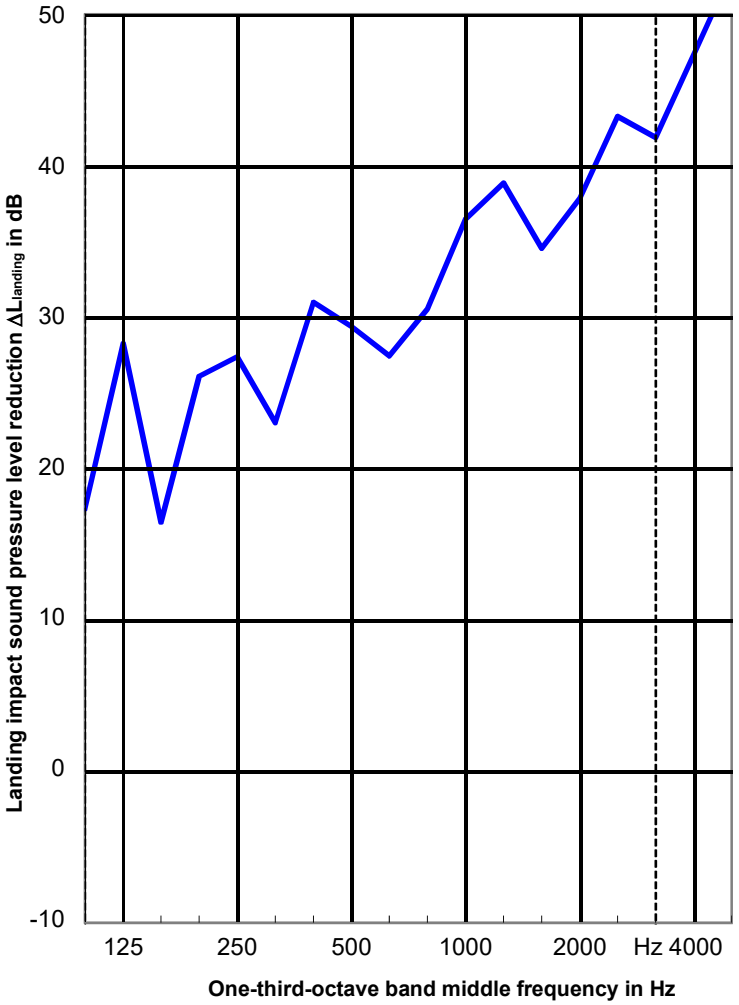
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 35 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 26 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	17.3
125	60.8	28.2
160	60.9	16.5
200	63.0	1) 26.1
250	62.8	1) 27.4
315	65.7	23.0
400	65.8	1) 31.0
500	66.2	1) 29.4
630	68.1	27.4
800	68.2	30.5
1000	68.9	1) 36.5
1250	68.7	1) 38.8
1600	68.2	34.5
2000	67.4	37.8
2500	65.8	1) 43.2
3150	63.8	41.9
4000	65.1	47.3
5000	70.0	52.9



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
12.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

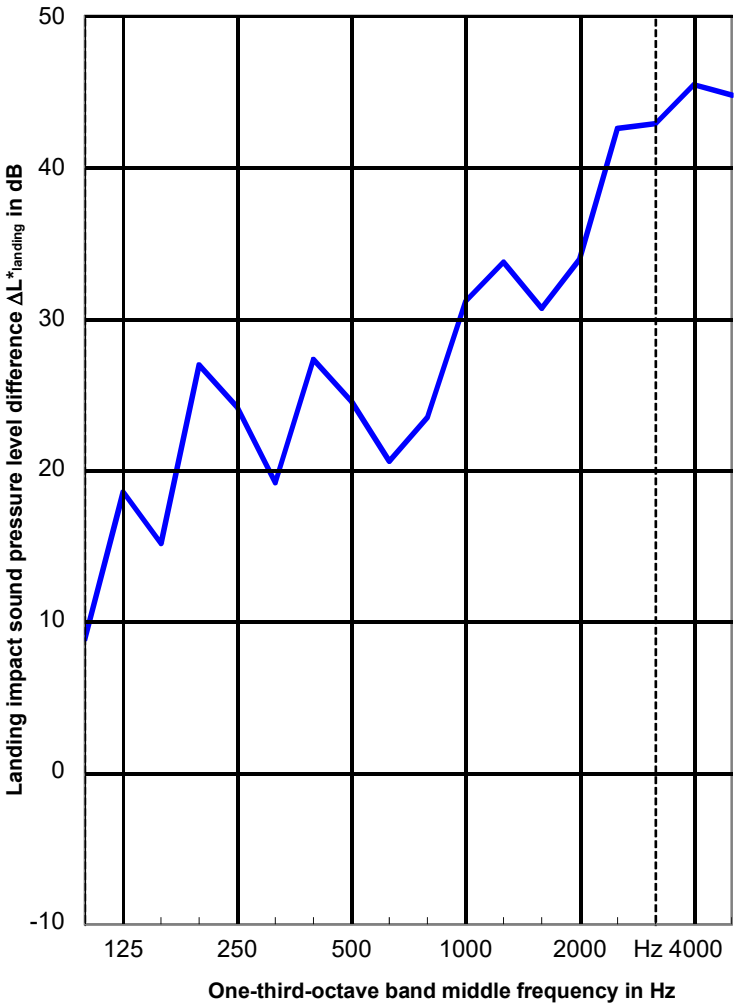
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 31 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	8.9
125	51.1	18.5
160	59.6	15.2
200	63.8	1) 26.9
250	59.6	1) 24.2
315	61.8	19.2
400	62.1	1) 27.3
500	61.3	1) 24.5
630	61.2	20.6
800	61.2	23.5
1000	63.6	1) 31.1
1250	63.6	1) 33.7
1600	64.4	30.7
2000	63.5	34.0
2500	65.1	1) 42.6
3150	64.9	42.9
4000	63.3	45.5
5000	61.9	44.8



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
12.6 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

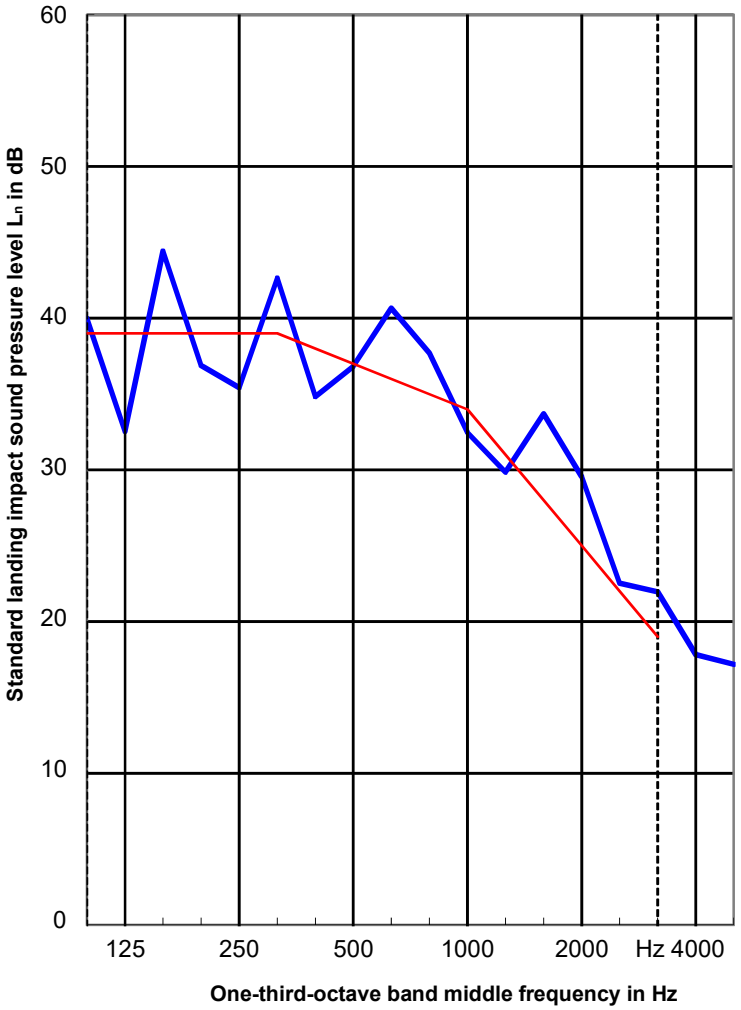
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$L_{n,w,landing}$ = 37 dB

$C_{I,landing}$ = -2 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 35 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	40.0
125	32.6
160	44.4
200	1) 36.9
250	1) 35.4
315	42.7
400	1) 34.8
500	1) 36.8
630	40.7
800	37.7
1000	1) 32.5
1250	1) 29.9
1600	33.7
2000	29.5
2500	1) 22.5
3150	22.0
4000	17.8
5000	17.2



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
25.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

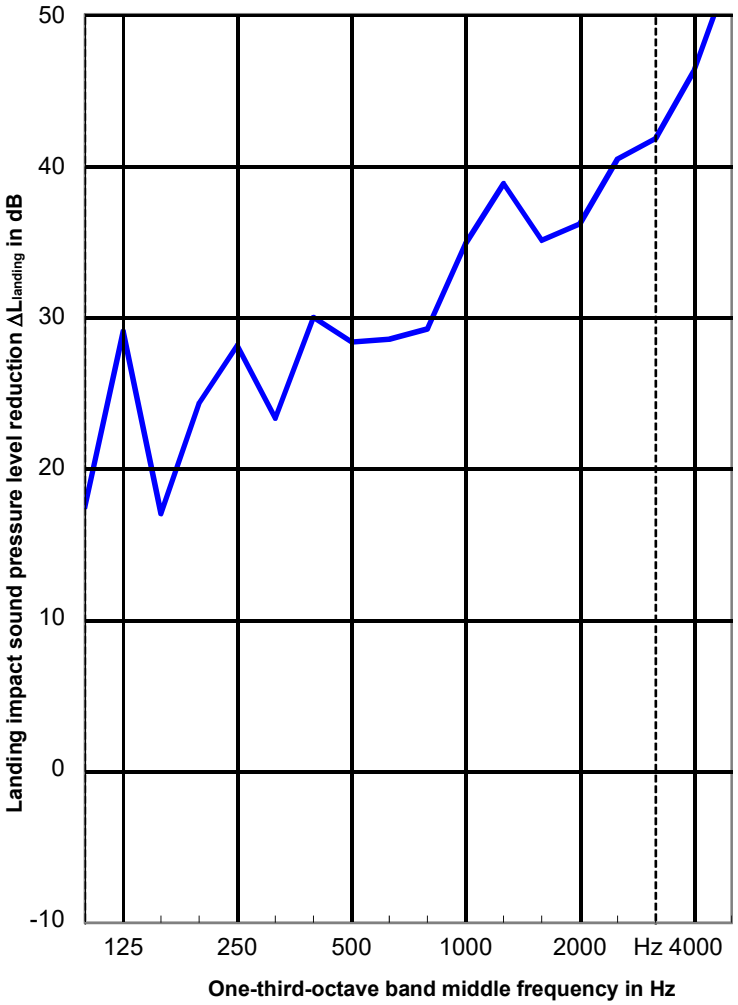
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 35 dB

$C_{I,\Delta,landing}$ = -9 dB

$\Delta L_{lin,landing}$ = 26 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	17.5
125	60.8	29.0
160	60.9	17.0
200	63.0	24.3
250	62.8	1) 28.1
315	65.7	23.3
400	65.8	1) 30.0
500	66.2	1) 28.3
630	68.1	28.5
800	68.2	29.2
1000	68.9	34.8
1250	68.7	1) 38.8
1600	68.2	35.1
2000	67.4	36.1
2500	65.8	40.4
3150	63.8	41.8
4000	65.1	46.2
5000	70.0	53.2



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
25.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

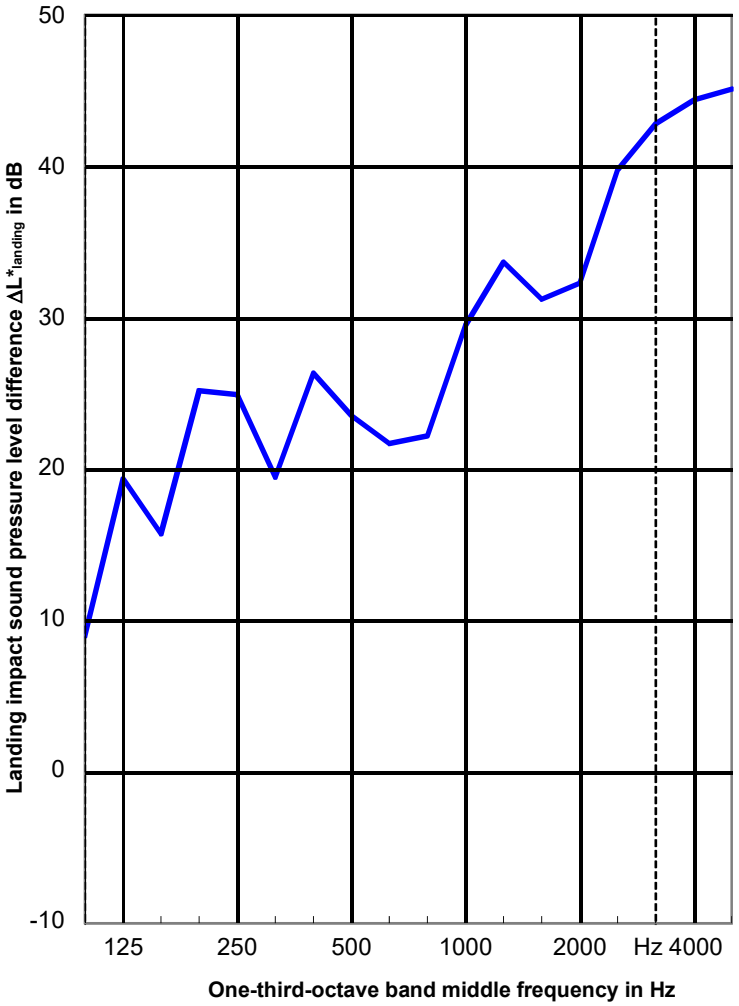
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 31 dB

$C^*_{I,\Delta,landing}$ = -10 dB

$\Delta L^*_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	9.0
125	51.1	19.4
160	59.6	15.7
200	63.8	25.2
250	59.6	1) 24.9
315	61.8	19.5
400	62.1	1) 26.3
500	61.3	1) 23.5
630	61.2	21.7
800	61.2	22.2
1000	63.6	29.5
1250	63.6	1) 33.7
1600	64.4	31.2
2000	63.5	32.3
2500	65.1	39.8
3150	64.9	42.8
4000	63.3	44.4
5000	61.9	45.1



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
25.2 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

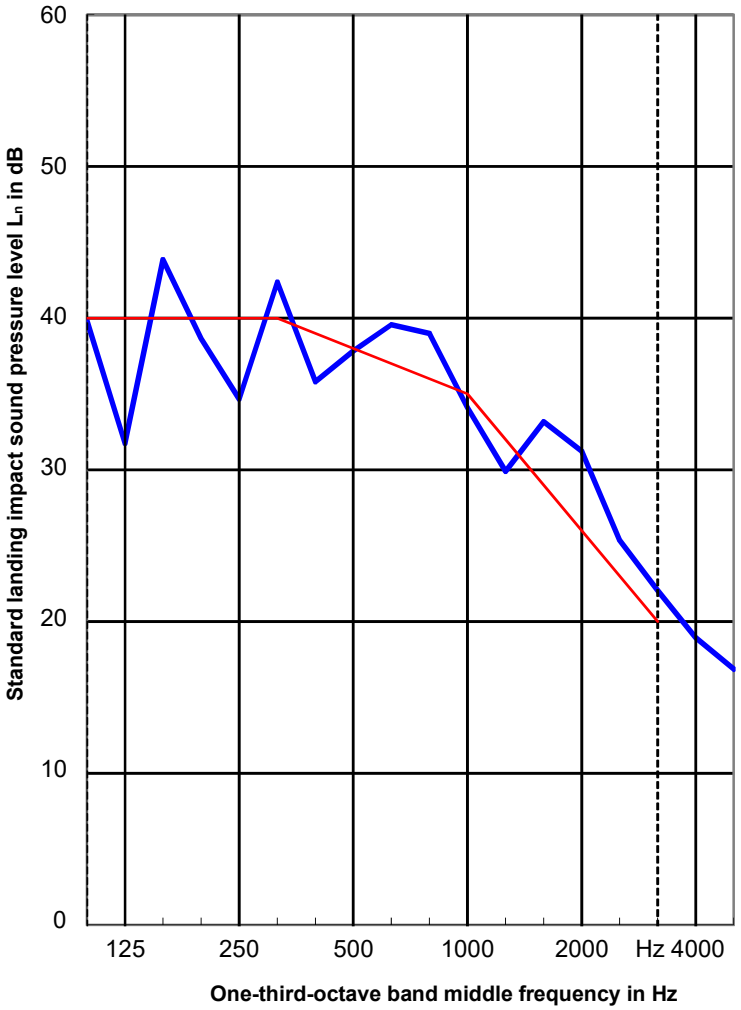
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$L_{n,w,landing}$ = 38 dB

$C_{I,landing}$ = -3 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 35 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	39.8
125	31.7
160	43.9
200	38.6
250	1) 34.7
315	42.4
400	1) 35.8
500	1) 37.8
630	39.6
800	39.0
1000	34.1
1250	1) 29.9
1600	33.2
2000	31.2
2500	25.4
3150	22.0
4000	18.9
5000	16.9



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level reduction

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
37.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

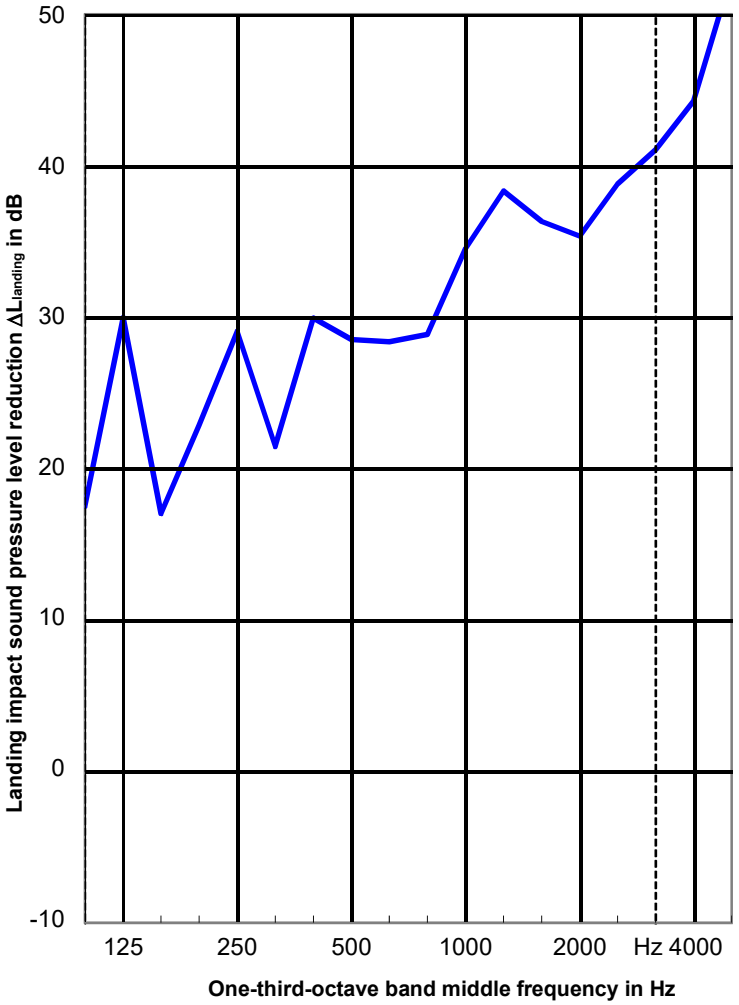
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$\Delta L_{W,landing}$ = 34 dB

$C_{I,\Delta,landing}$ = -8 dB

$\Delta L_{lin,landing}$ = 26 dB

Frequency f [Hz]	$L_{n0,wall}$ 1/3 Octave band [dB]	$\Delta L_{landing}$ 1/3 Octave band [dB]
100	57.3	17.5
125	60.8	30.0
160	60.9	17.0
200	63.0	22.8
250	62.8	1) 29.0
315	65.7	21.4
400	65.8	1) 29.9
500	66.2	1) 28.5
630	68.1	28.4
800	68.2	28.9
1000	68.9	34.5
1250	68.7	1) 38.3
1600	68.2	36.3
2000	67.4	35.3
2500	65.8	38.8
3150	63.8	41.0
4000	65.1	44.3
5000	70.0	52.7



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Landing impact sound pressure level difference

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
37.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

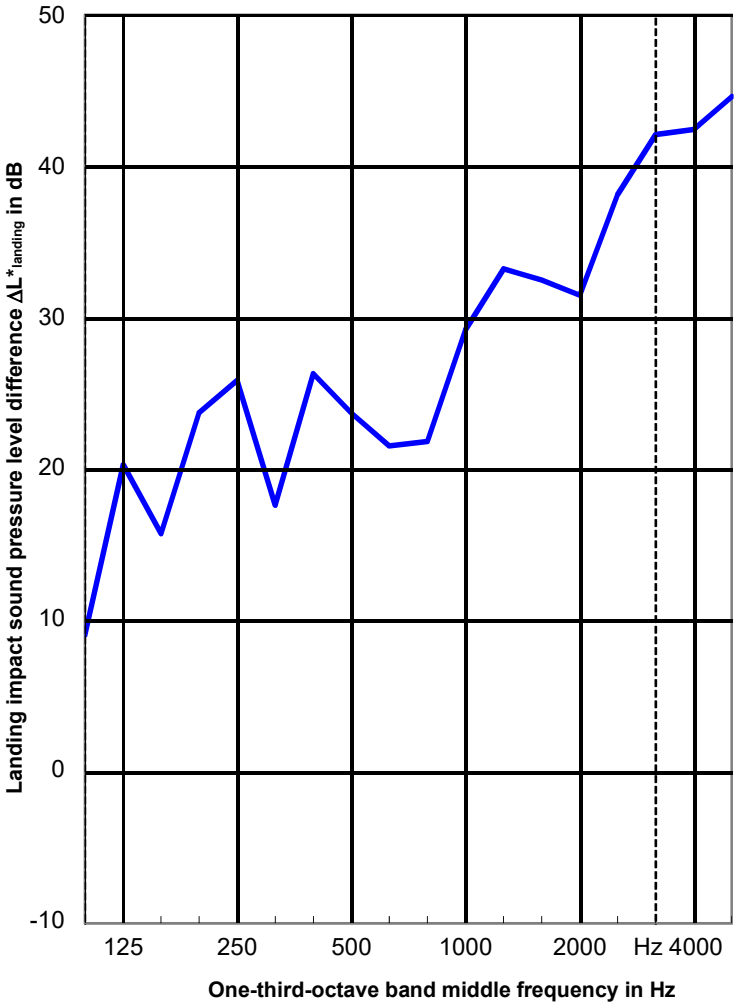
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$\Delta L^*_{W,landing}$ = 30 dB

$C^*_{I,\Delta,landing}$ = 30 dB

$\Delta L^*_{lin,landing}$ = 21 dB

Frequency f [Hz]	$L_{n0,landing}$ 1/3 Octave band [dB]	$\Delta L^*_{landing}$ 1/3 Octave band [dB]
100	48.8	9.1
125	51.1	20.3
160	59.6	15.7
200	63.8	23.7
250	59.6	1) 25.8
315	61.8	17.6
400	62.1	1) 26.3
500	61.3	1) 23.7
630	61.2	21.5
800	61.2	21.8
1000	63.6	29.2
1250	63.6	1) 33.2
1600	64.4	32.5
2000	63.5	31.5
2500	65.1	38.1
3150	64.9	42.1
4000	63.3	42.4
5000	61.9	44.6



<: Limitation by background noise
1): Airborne sound flanking path correction
2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013
Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015
Source Standard tapping machine
Receiving One-third-octave band filter ------ Limit frequency range for evaluation according to ISO 717-2

Standard landing impact sound pressure level

(measured in the laboratory according to DIN 7396)

Subject of approval: Egcopal SP light with 20 mm elastomer bearing, tested with gap spacing z = 1.5 cm
37.8 kN load in addition to dead weight (12.6 kN)

Sand-lime brick wall, 4.2 x 2.9 x 0.25 m, area-based mass approx. 450 kg/m^2, 10 mm cement plaster
Stair landing according to DIN 7396
Additional load with hydr. ram, 55 cm from wall and centred on stair landing centre line
With FDPL 15 mm distance plate between wall and stair landing

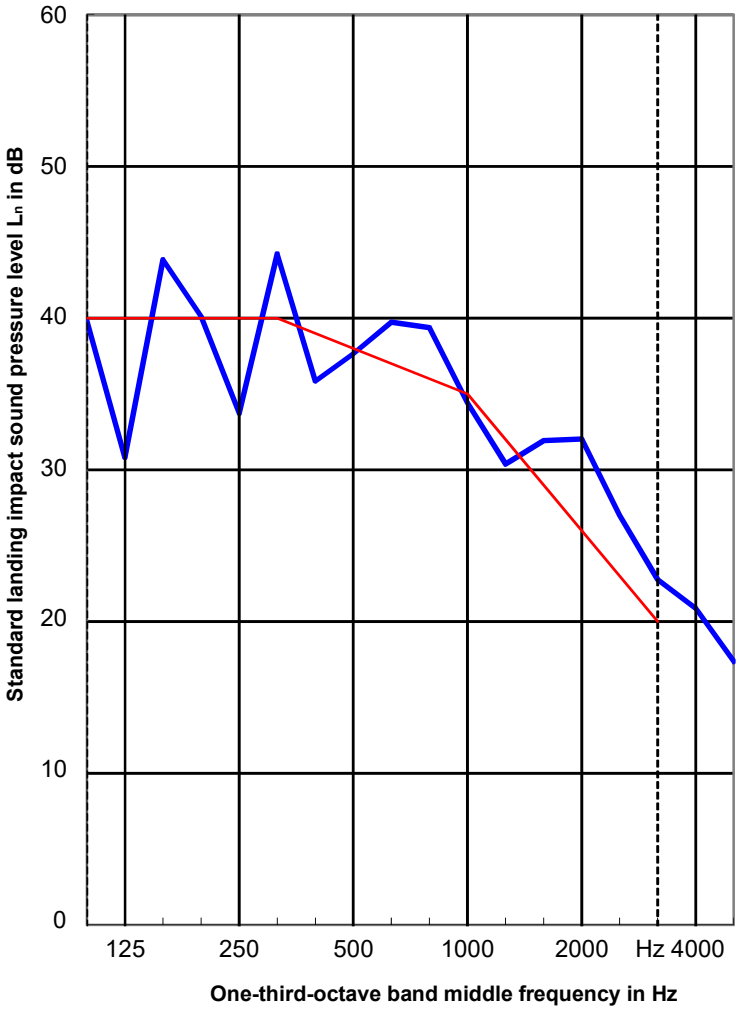
Measurement: Empa, Sound house 1, Room 3 Volume: 81.5 m^3 **Date: 22/03/2021**
Temperature: 20.3 °C, relative humidity: 41%, air pressure: 968 hPa

$L_{n,w,landing}$ = 38 dB

$C_{I,landing}$ = -3 dB

$L_{n,w,landing}$ + $C_{I,landing}$ = 35 dB

Frequency f [Hz]	$L_{n,landing}$ 1/3 Octave band [dB]
100	39.8
125	30.8
160	43.8
200	40.1
250	1) 33.7
315	44.2
400	1) 35.9
500	1) 37.7
630	39.7
800	39.4
1000	34.4
1250	1) 30.4
1600	31.9
2000	32.0
2500	27.0
3150	22.8
4000	20.9
5000	17.4



<: Limitation by background noise

1): Airborne sound flanking path correction

2): Airborne sound flanking path correction not possible

Evaluation EN ISO 717-2:2013

Measurement EN ISO 10140-3:2010 & EN ISO 10140-3/A1:2015

Source Standard tapping machine

Receiving One-third-octave band filter

Shifted reference curve

------ Limit frequency range for evaluation according to ISO 717-2

7 Literature

[1] DIN 7396:2016-06, Tests in building acoustics - Test methods for the acoustical characterization of isolating elements for heavy stairs

[2] EN ISO 10140-1:2016-08, Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products (ISO 10140-1:2016)

[3] EN ISO 10140-2:2010-09, Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2008)

[4] EN ISO 10140-3:2010-09, Acoustics - Laboratory measurement of sound insulation of building elements - Part 3: Measurement of impact sound insulation (ISO 10140-3:2010)

[5] EN ISO 10140-3/A1:2015-06, Acoustics - Laboratory measurement of sound insulation of building elements - Part 3: Measurement of airborne sound insulation - Amendment 1 (ISO 10140-3:2010/Amd 1:2015)

[6] EN ISO 10140-4/A1:2010-09, Acoustics - Laboratory measurement of sound insulation of building elements - Part 4: Measurement procedures and requirements (ISO 10140-4:2010)

[7] EN ISO 10140-5:2010-09, Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment (ISO 10140-5:2010)

[8] EN ISO 10140-5/A1:2014-05, Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment - Amendment 1: Rain sound (ISO 10140-5:2010/Amd 1:2014)

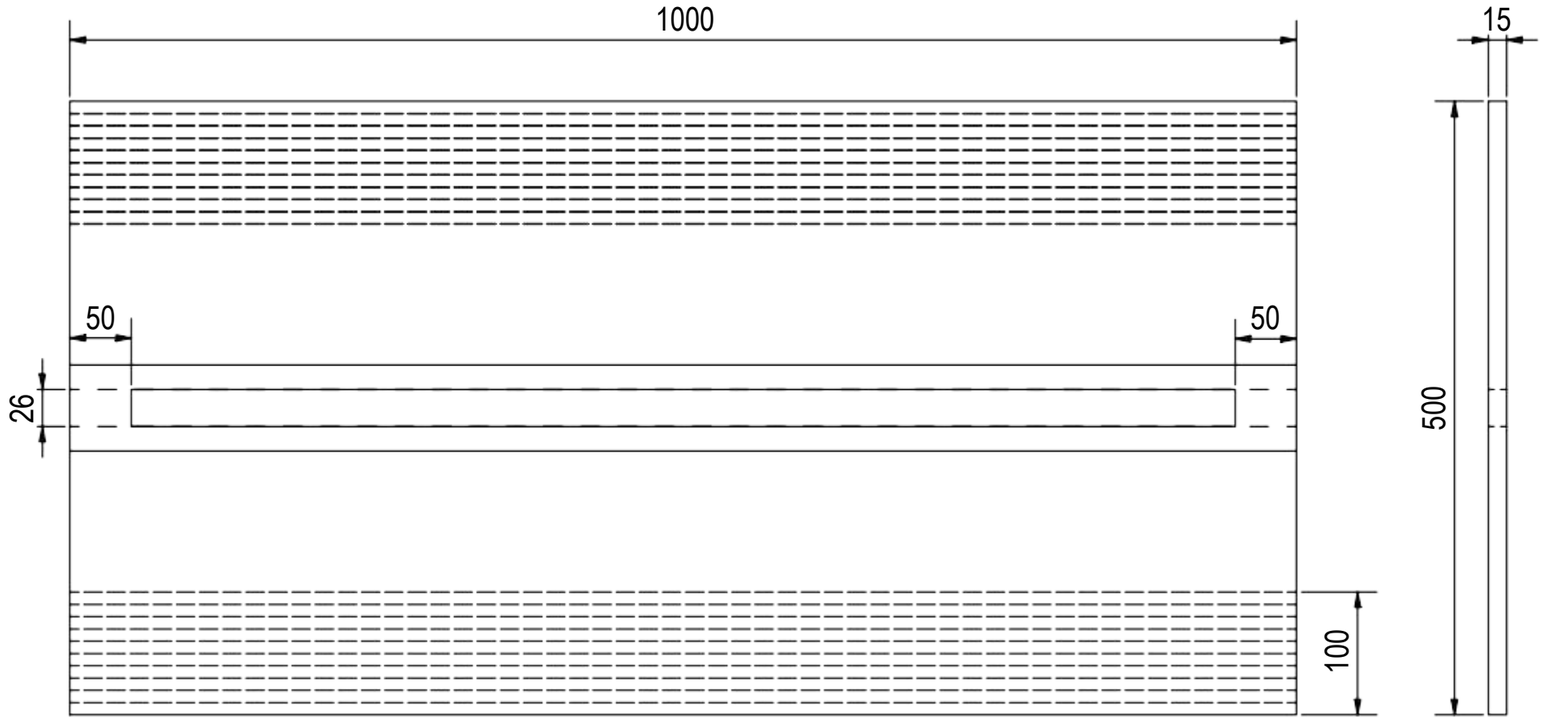
[9] EN ISO 717-1:2020-12, Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1:2020)

[10] EN ISO 717-2:2020-12, Acoustics - Rating of sound insulation in buildings and of building elements - Part 2: Impact sound insulation (ISO 717-2:2020)

[11] EN ISO 12999-1:2020-11, Acoustics - Determination and application of measurement uncertainties in building acoustics - Part 1: Sound insulation (ISO 12999-1:2020)

Annex A

Egcoscal SP F-shape



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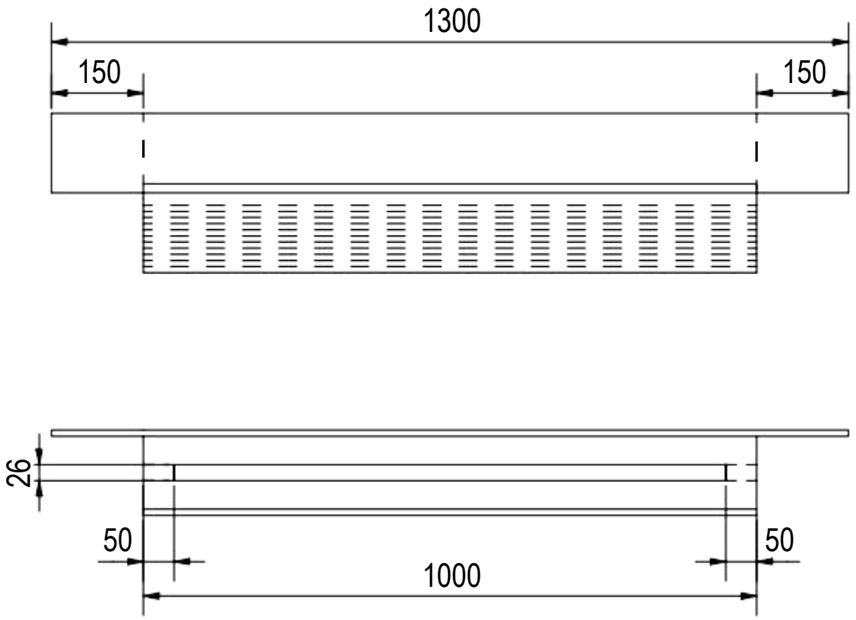
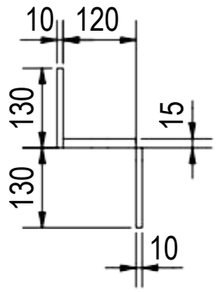
Egcoscal SP S-shape





Rev.	Date	Drawn	Details/Commentary

MAX FRANK BUILDING COMMON GROUND

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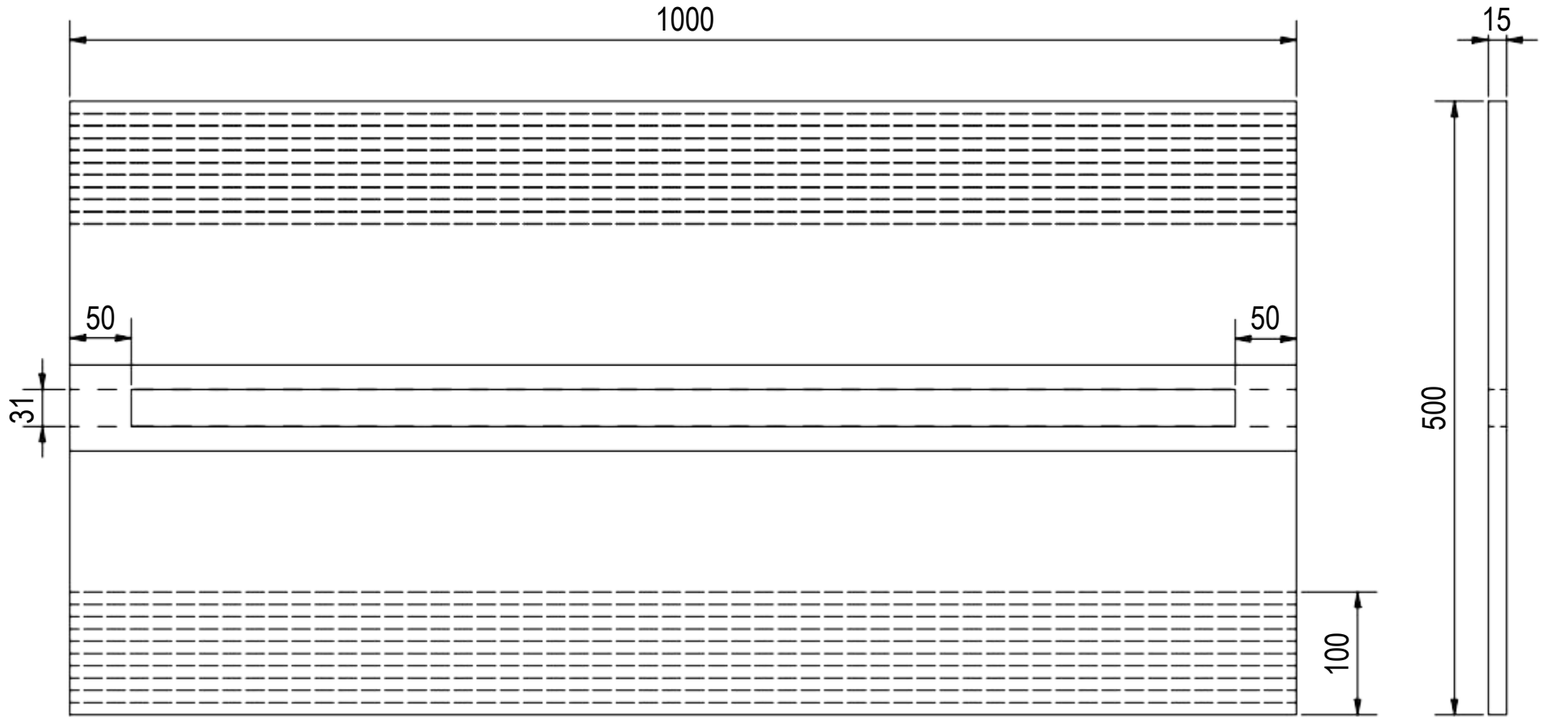
Egcoscal SP F-shape



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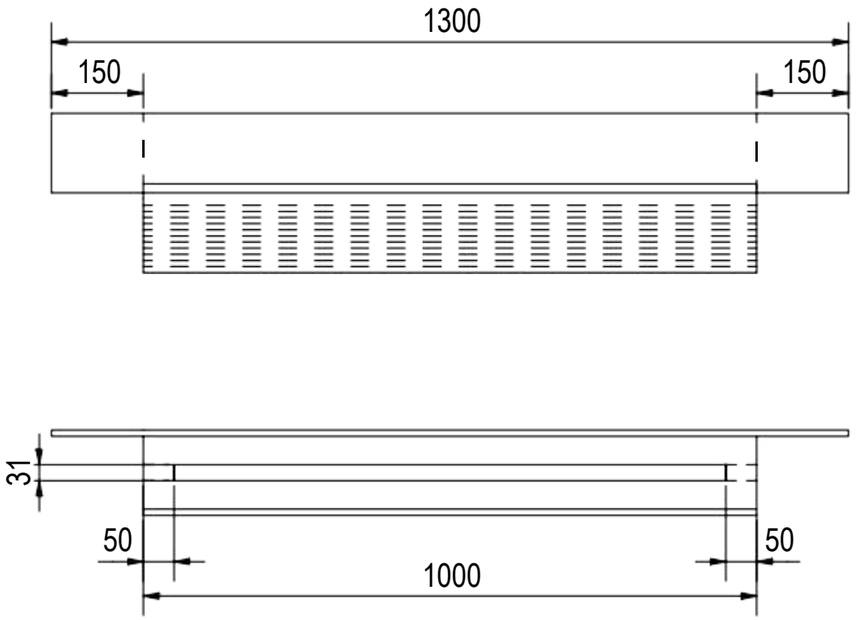

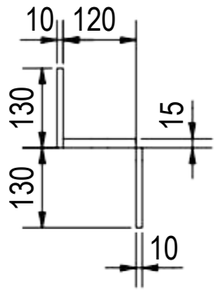

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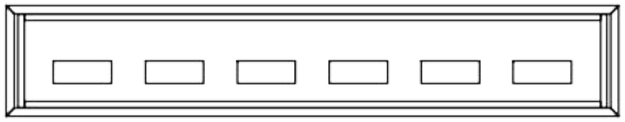

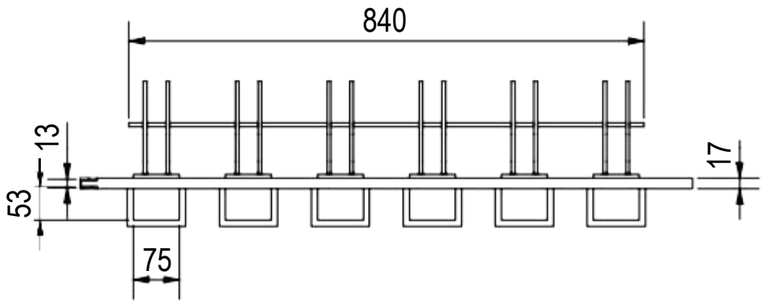

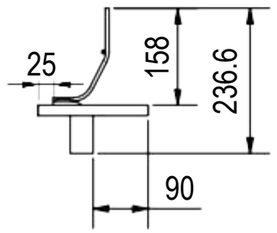

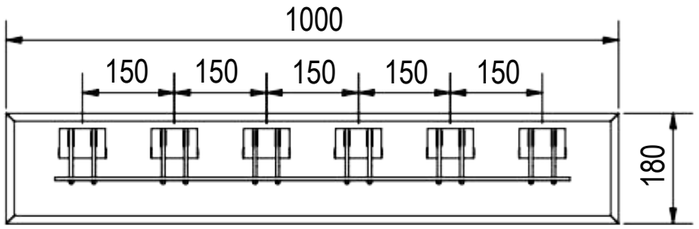

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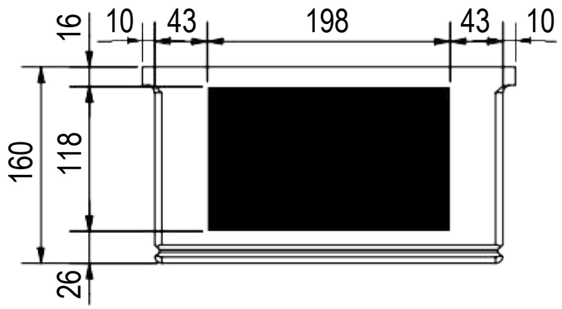

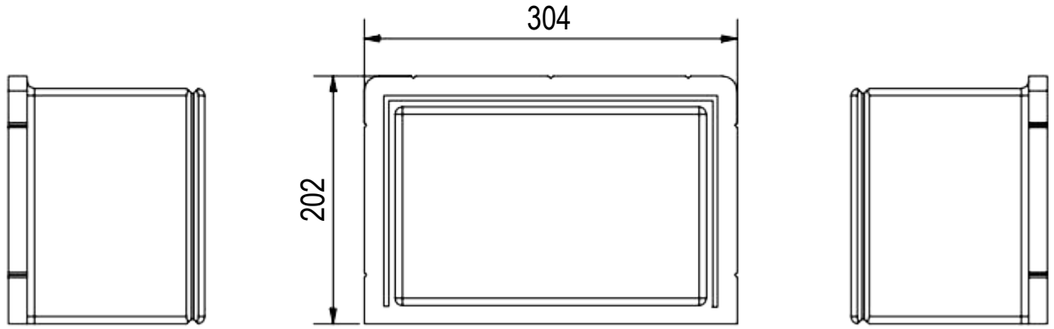

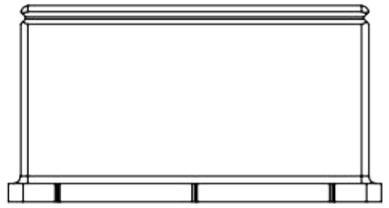

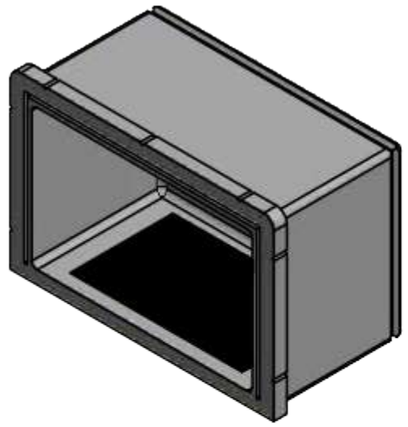

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Rev.	Date	Drawn	Details/Commentary

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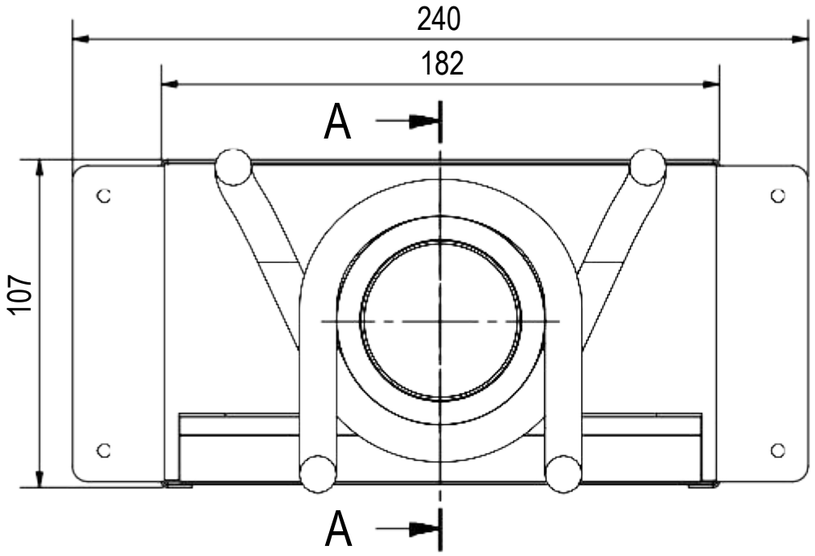

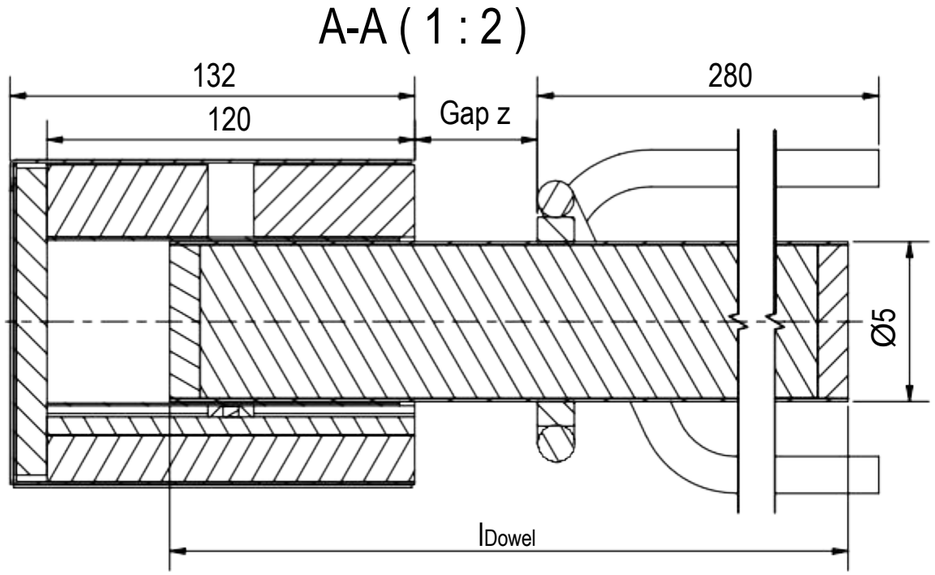

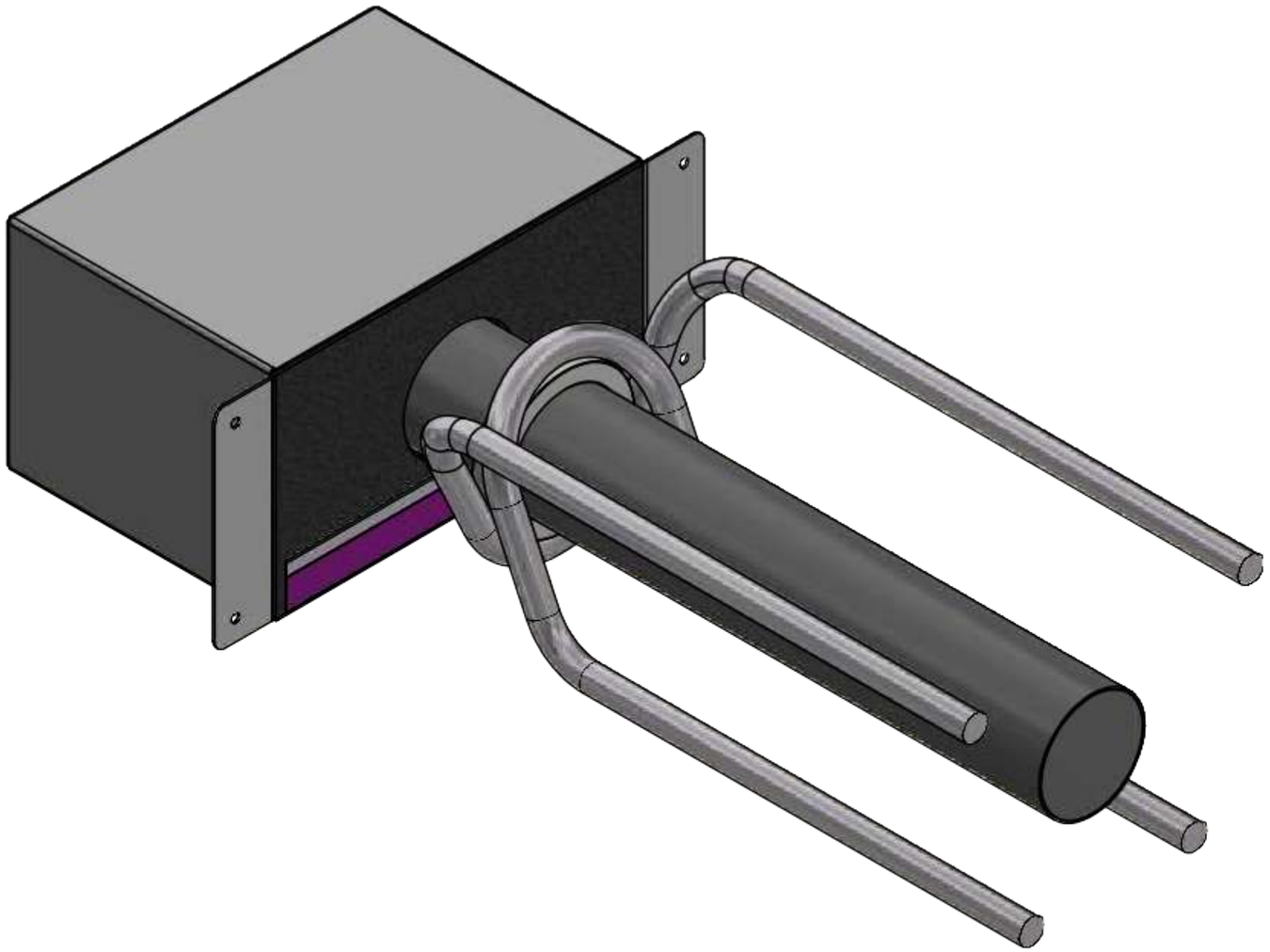

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Gap z [mm]	lDowel [mm]
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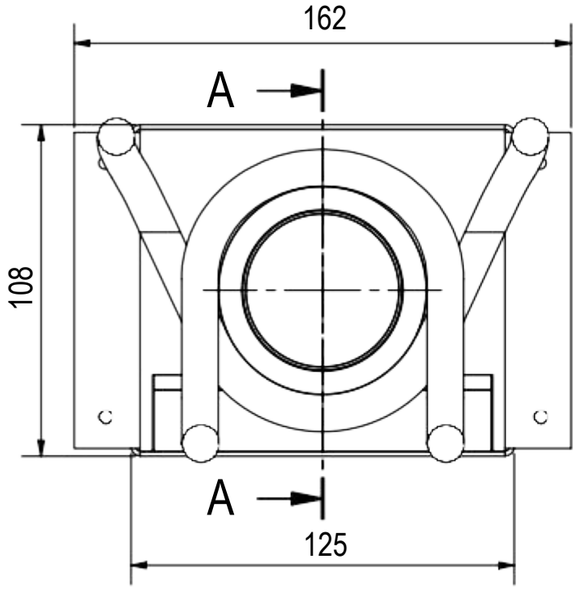

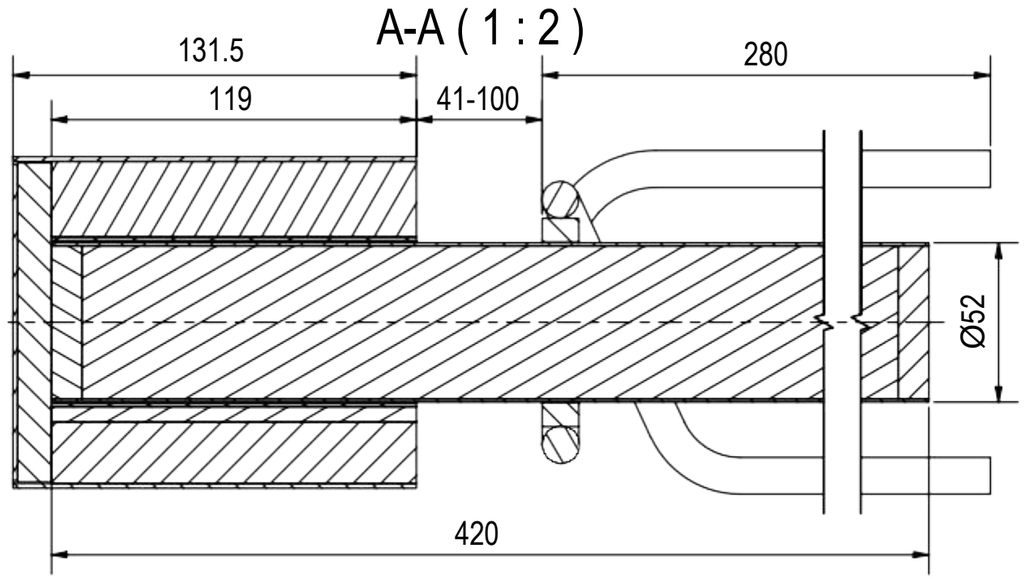

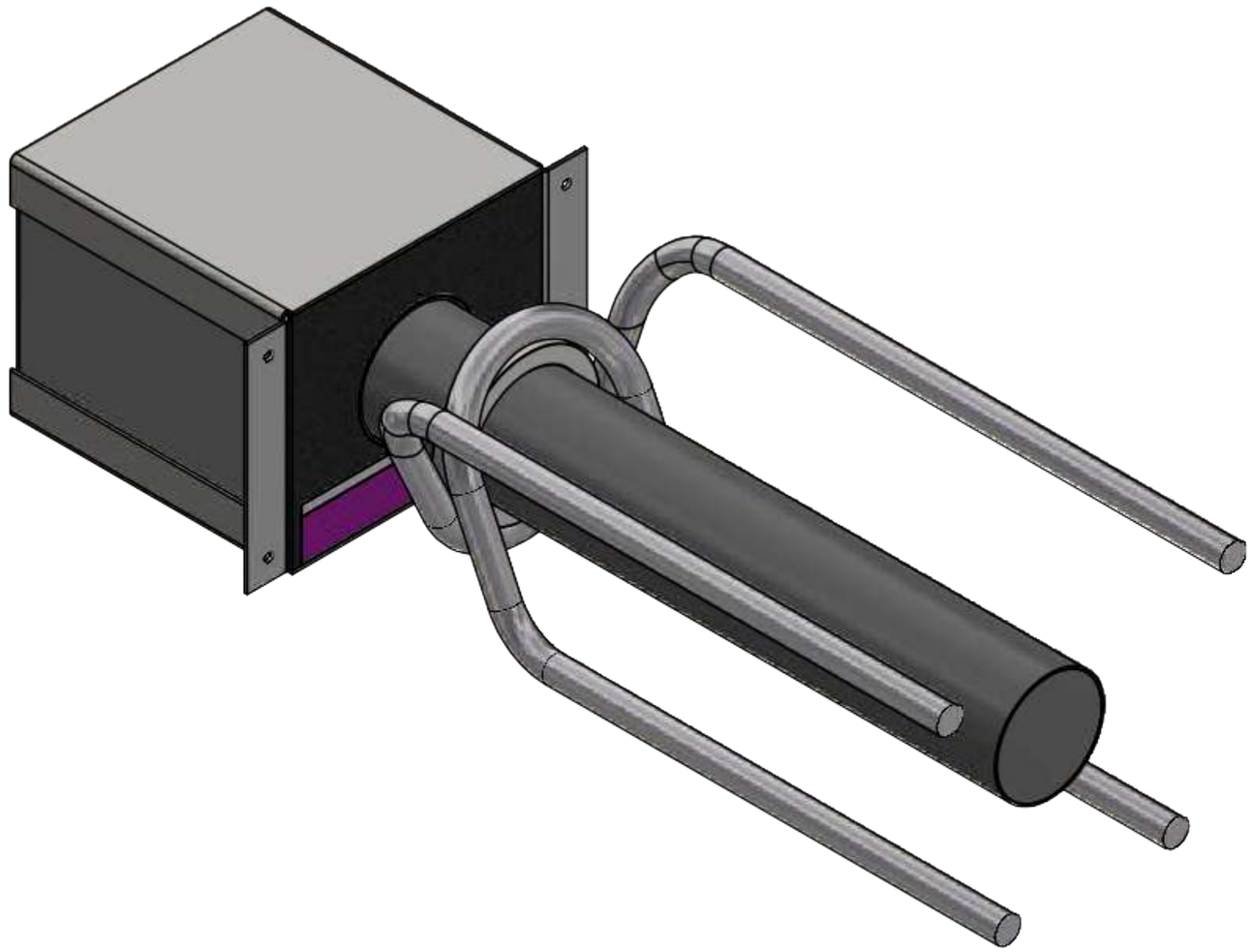

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Drawing name: Egcopal SPH		

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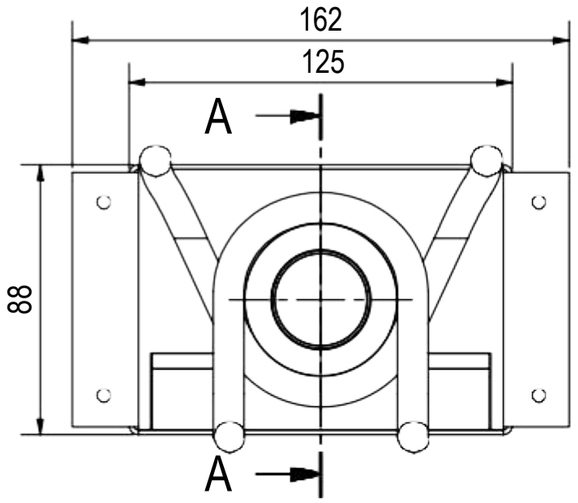

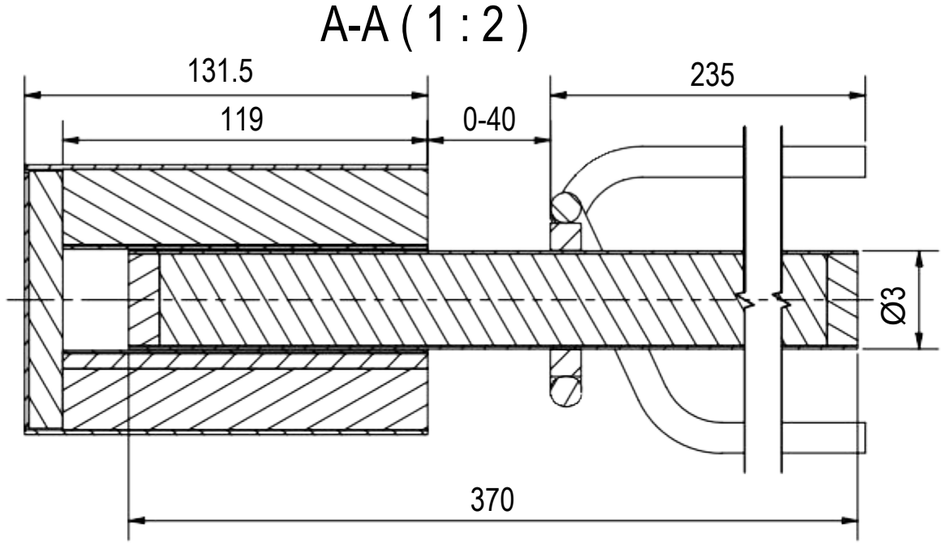

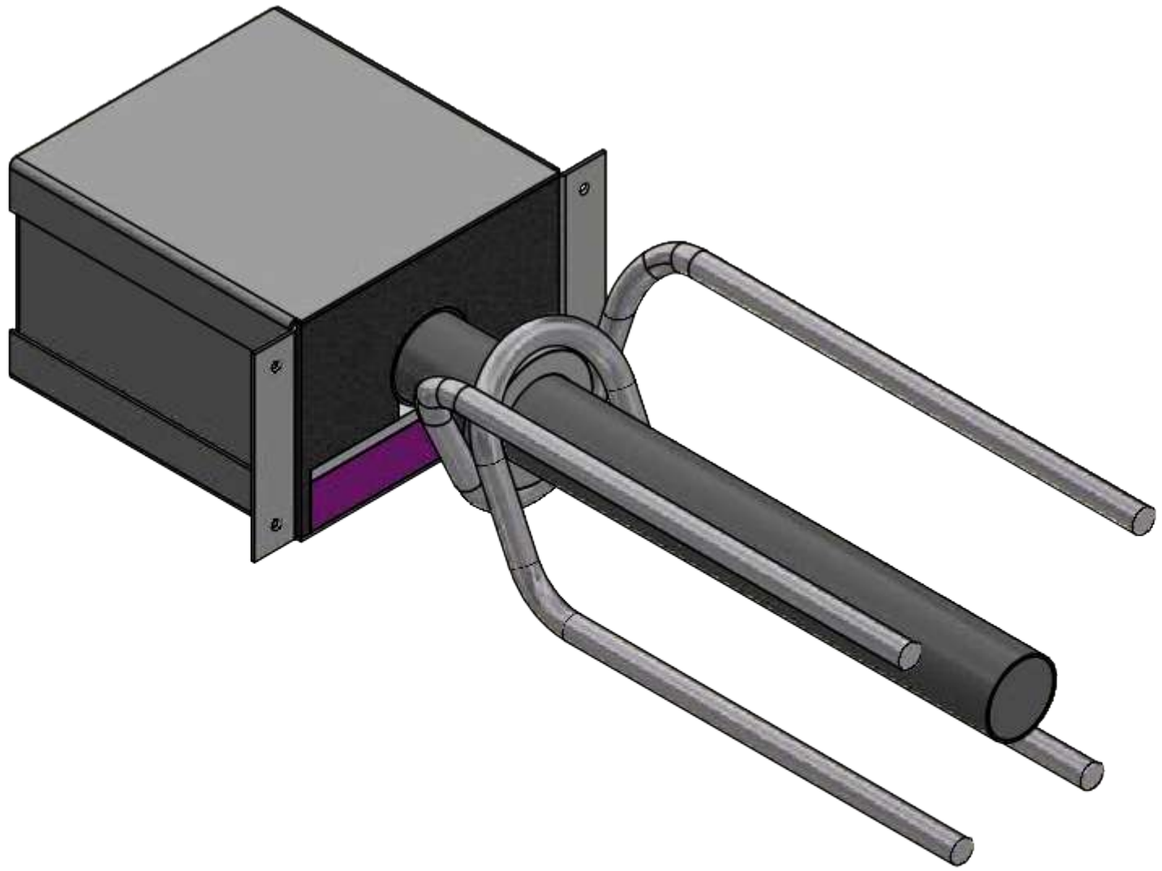

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Rev.	Date	Drawn	Details/Commentary

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Tested:	Released:	
Scale: 1 : 2	Unit: mm	Page: A3

Drawing name: Egcopal SP

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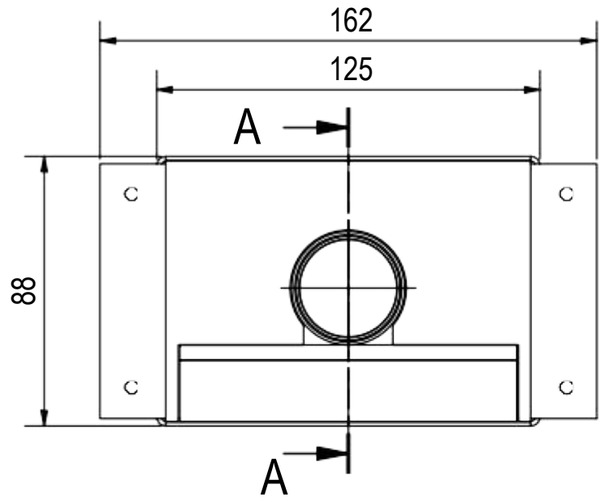

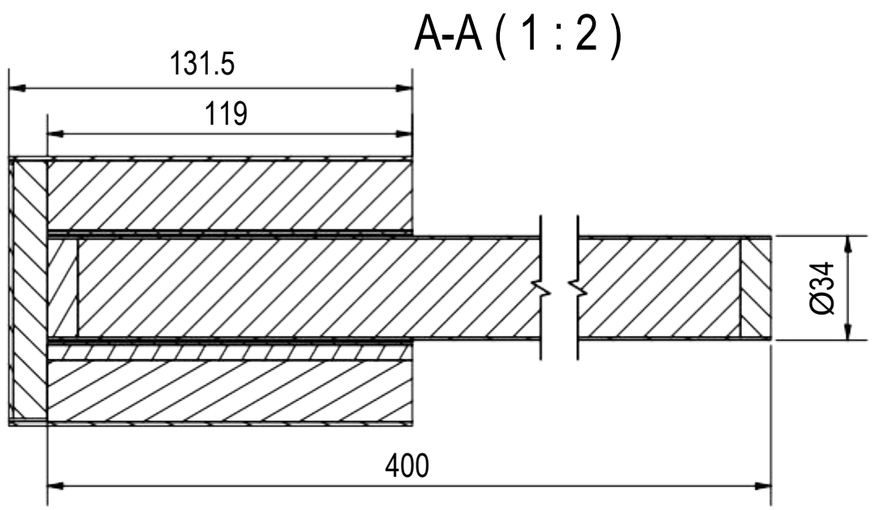

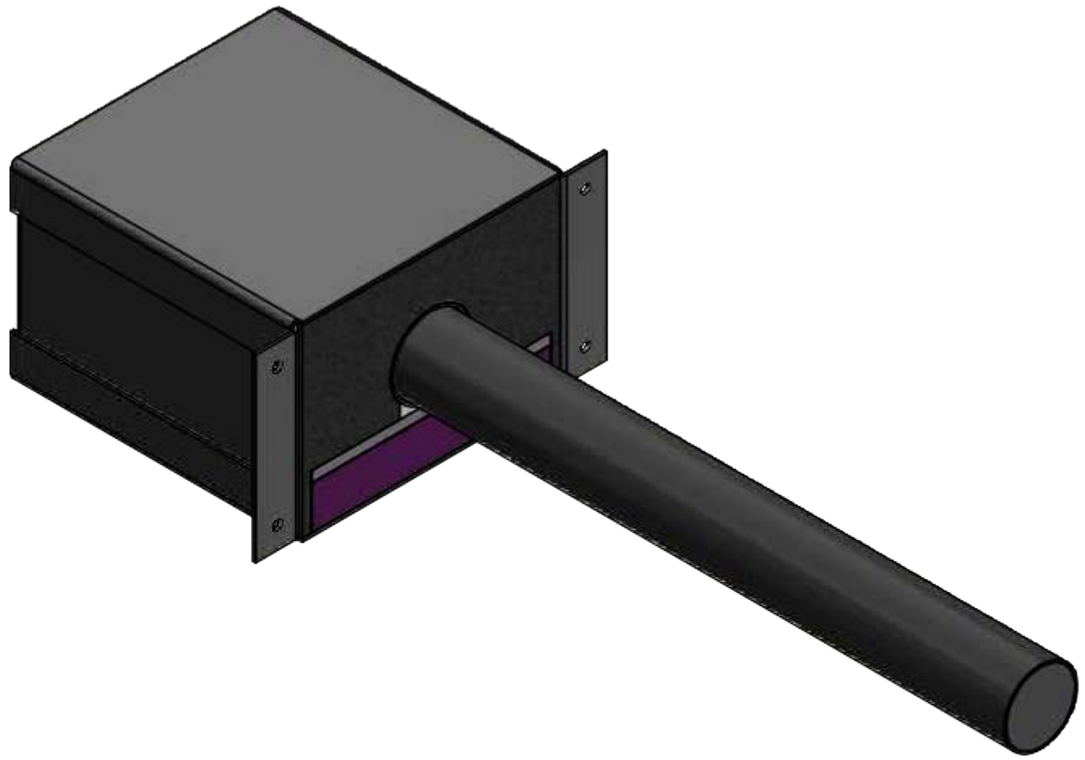

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