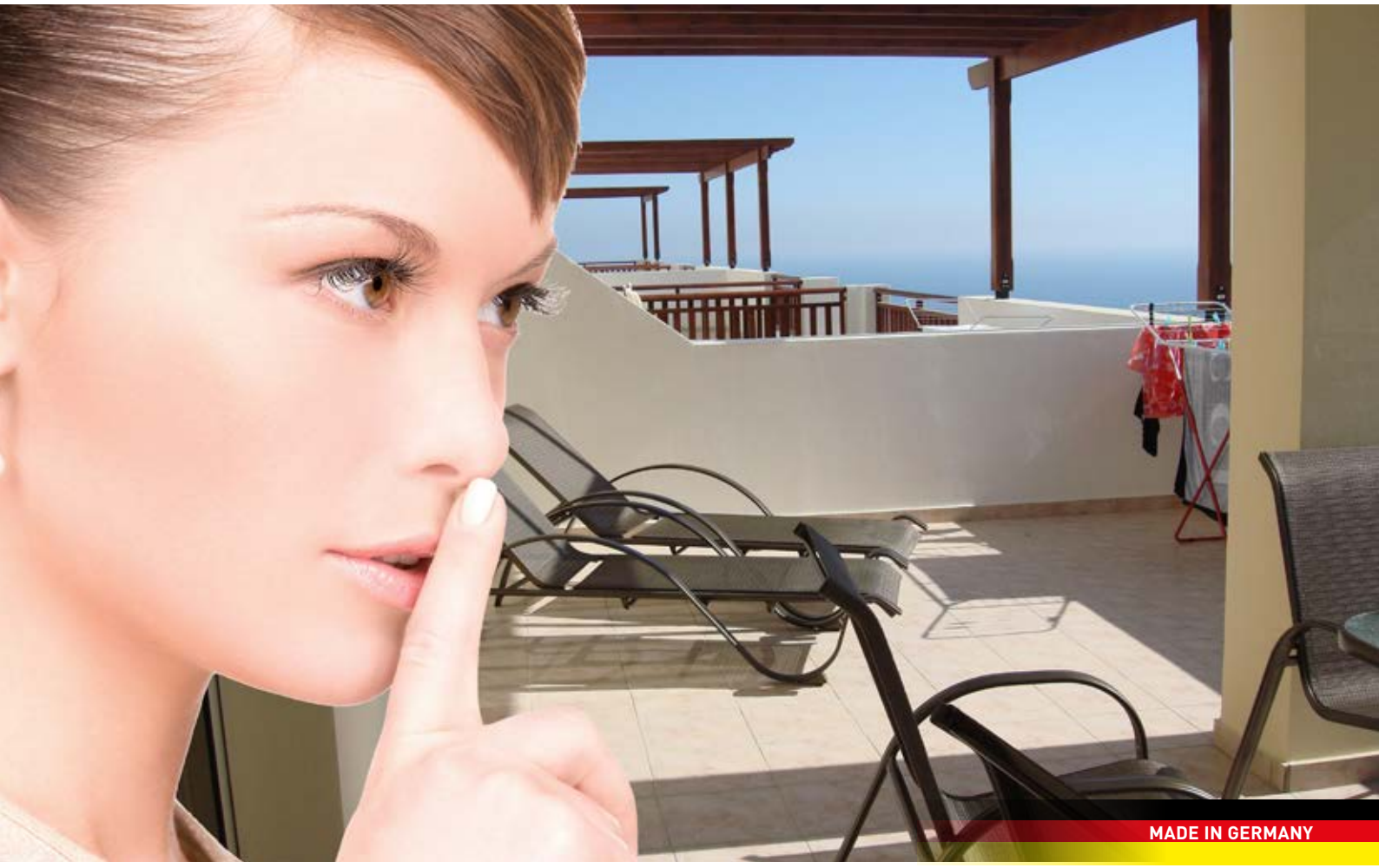
KRAIBURG RELASTEC

TECHNICAL DOCUMENTATION FOR ARCHITECTS AND PLANNERS

IMPACT SOUND INSULATION OF FLAT ROOF CONSTRUCTIONS

DAMTEC® sonic • DAMTEC® sonic drain plus



MADE IN GERMANY

#1 | 2019

for field-proven protection against physical damage

KRAITEC® PROTECTING VALUES

DAMTEC® sonic

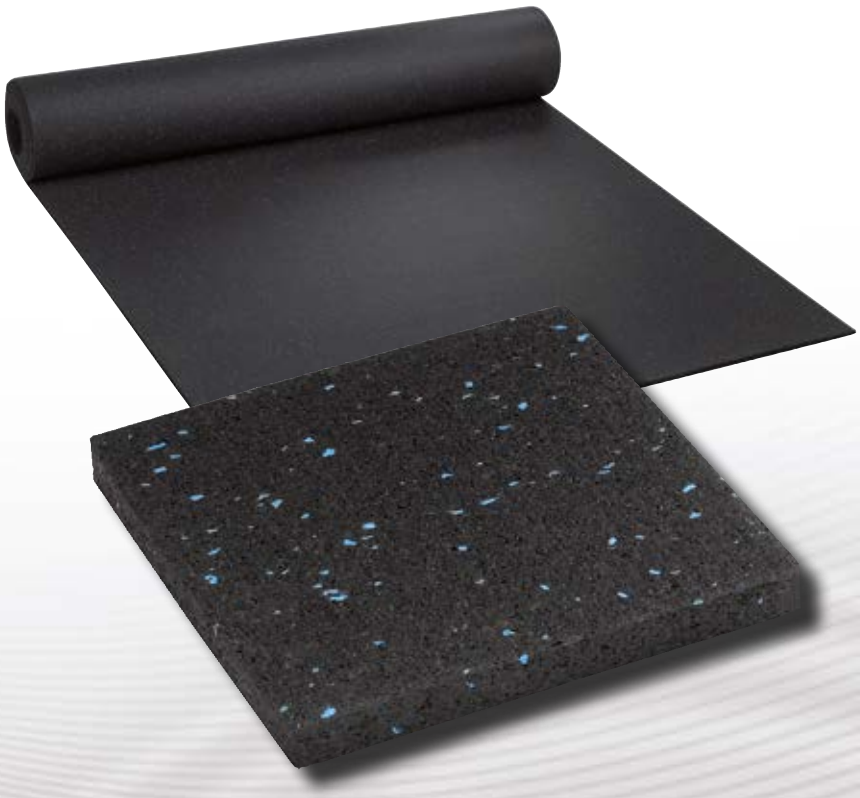
STRUCTURAL PROTECTION MAT FOR SOUND INSULATION

Peace and quiet is a basic need that is highly valued in our time. Effective impact sound insulation increases quality of life; effective sound insulation creates a pleasant living and working atmosphere.

DAMTEC® sonic is a special structural protection mat in accordance with DIN 18531-2 [2017-07] for impact sound protection on roof terraces, balconies, loggias and pergolas.
DAMTEC® sonic is installed in classic structures with different top coverings and supporting constructions. Non-ventilated roof constructions with PIR, EPS or XPS (warm and inverted roof) were tested accordingly.

In a reinforced concrete ceiling with a thickness of at least 140 mm the DAMTEC® sonic structures comply with the values for increased sound insulation according to DIN4109, companion sheet 2.

Technical data	
Material	Recycled rubber granules bonded with polyurethane elastomer
Volume weight	ca. 780 kg/m³
Material thickness	8 mm (±0.3 mm)
Width of sheets	1,250 mm (±1.5% mm)
Length	Length in m (±1.5%) on request
Color	Black/blue color particles
Surface	Granule structure
Tensile strength	ca. 0.3 N/mm² (EN ISO 1798)
Elongation at break	ca. 30% (EN ISO 1798)
Fire behavior	E_{fl} (DIN EN 13501-1)
Temperature resistance	–30 to 80°C
Traffic load	ca. 17 t/m² at 10% compression ca. 32 t/m² at 15% compression ca. 47 t/m² at 20% compression based on DIN EN ISO 3386-2



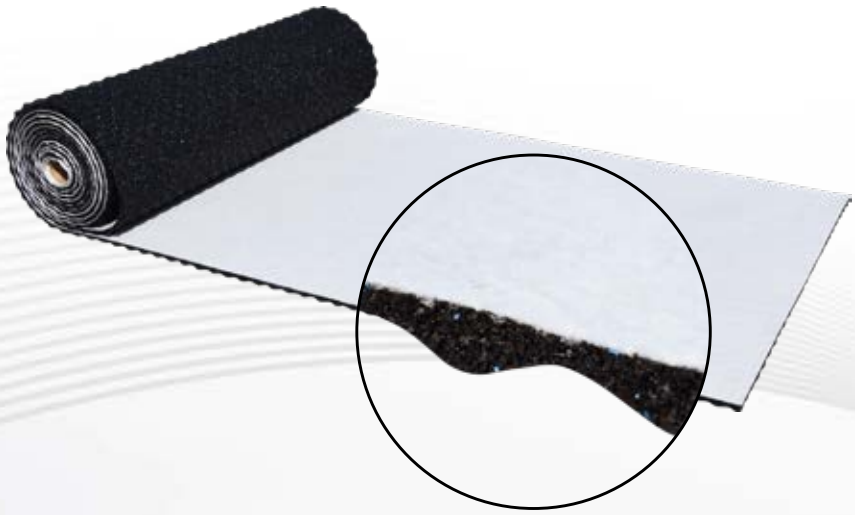
DAMTEC® sonic drain plus

FLEECE-LAMINATED STRUCTURAL PROTECTION MAT FOR SOUND INSULATION

DAMTEC® sonic drain plus is a special fleece-laminated drainage protection mat in accordance with DIN 18531-2 [2017-07] for impact sound insulation on roof terraces, balconies, loggias and pergolas.
DAMTEC® sonic drain plus is installed for example in classic constructions with concrete slabs on a gravel bed and thermal insulation by means of PIR, EPS or XPS (warm and inverted roof).

For detailed information on drainage properties, see p. 50

Technical data	
Material	Recycled rubber granules bonded with PU elastomer
Volume weight	ca. 700 – 800 kg/m³
Material thickness	15/6 mm (± 1.0 mm)
Width of sheets	1,200 mm (± 1.5 % mm)
Length	8.0 m (± 1.5 %)
Color	Black with blue color particles
Surface	Fleece lamination
Bottom side	Granule structure, with profile
Tensile strength	ca. 0.3 N/mm² (DIN EN ISO 1798)
Elongation at break	ca. 30 % (DIN EN ISO 1798)
Fire behavior	E_{fl} (DIN EN 13501-1)
Temperature resistance	– 30 to 80 °C
Traffic load	ca. 0.95 t/m² at 10 % compression ca. 1.88 t/m² at 15 % compression ca. 3.18 t/m² at 20 % compression based on DIN EN 826



DAMTEC® sonic ROOF CONSTRUCTION 01

Test report number 137-450

INSULATION PIR / WATERPROOFING BITUMEN SHEETS

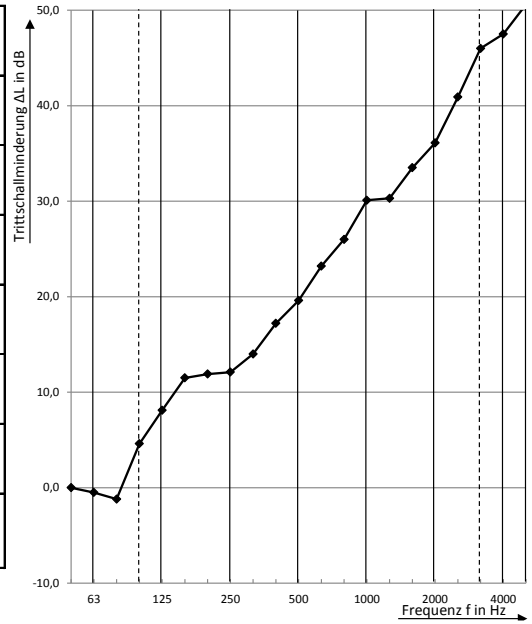
IMPACT SOUND IMPROVEMENT **ΔLw = 27 dB**

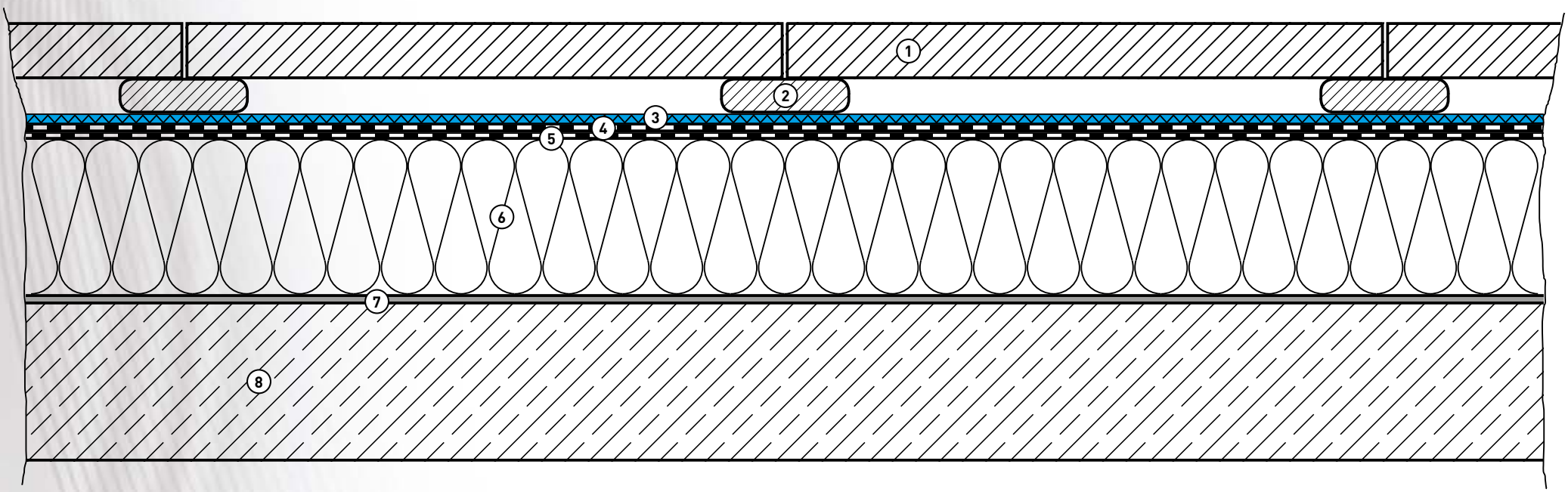
KRAITEC®

Scale 1:5

1. Concrete sidewalk slab, smooth 500 x 500 x 50 mm
2. Mortar sacks
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Insulation PIR FA WLS 024, 140 mm
7. Bitumen vapor barrier V60 S4 +AL
8. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	0,0
63	62,7	-0,5
80	57,4	-1,2
100	57,2	4,6
125	67,5	8,1
160	62,6	11,5
200	64,1	11,9
250	67,1	12,1
315	65,3	14,0
400	64,7	17,2
500	65,0	19,6
630	65,3	23,2
800	66,4	26,0
1000	67,8	30,1
1250	67,7	30,3
1600	68,2	33,5
2000	68,8	36,1
2500	68,6	40,9
3150	67,9	46,0
4000	66,9	47,5
5000	64,4	50,6





DAMTEC® sonic ROOF CONSTRUCTION 02

Test report number 137-451

INSULATION EPS / **WATERPROOFING** BITUMEN SHEETS

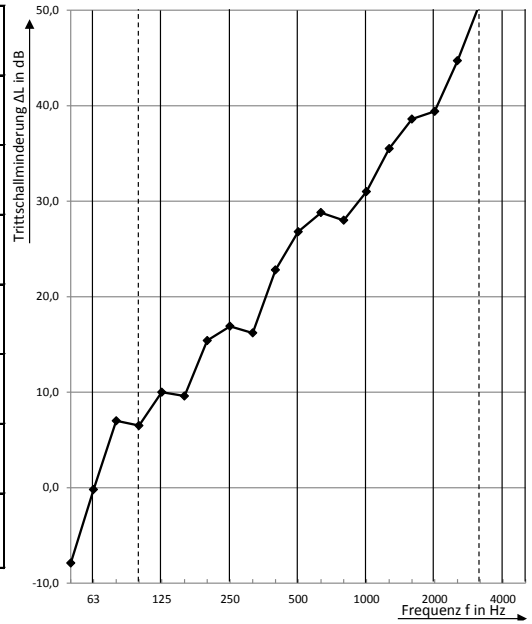
IMPACT SOUND IMPROVEMENT **ΔLw = 29 dB**

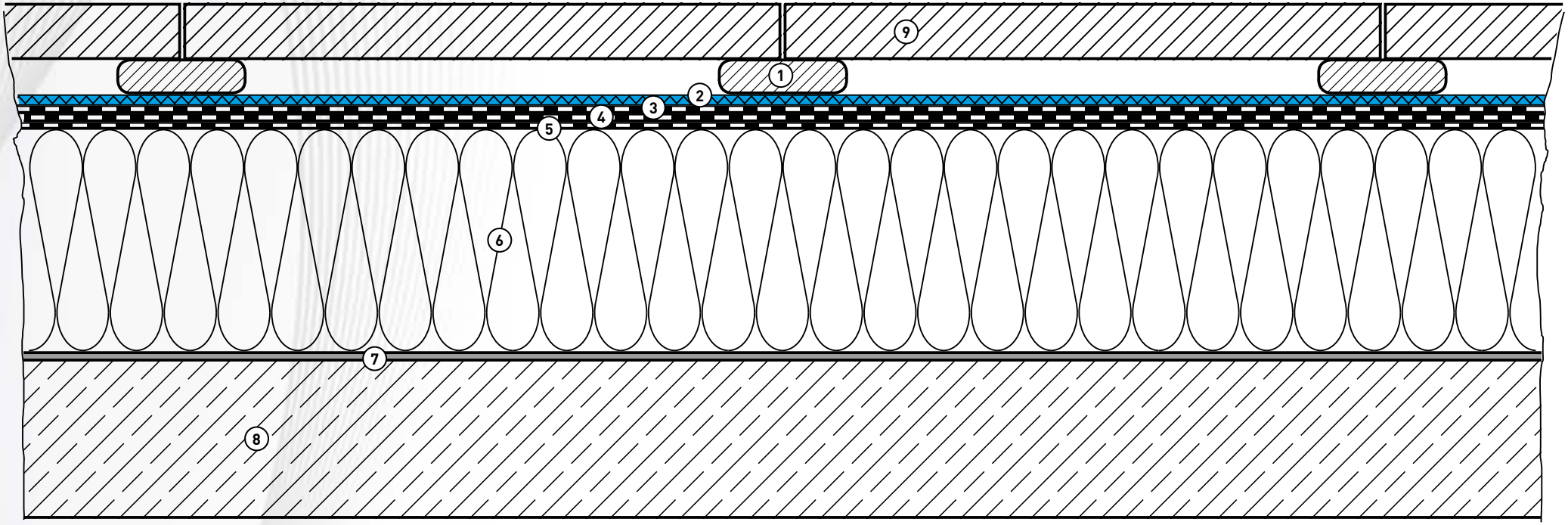
KRAITEC®

Scale 1:5

1. Concrete sidewalk slab, smooth 500 x 500 x 50 mm
2. Mortar sacks
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Laminate layer G 200 DD, sand
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	-7,9
63	62,7	-0,2
80	57,4	7,0
100	57,2	6,5
125	67,5	10,0
160	62,6	9,6
200	64,1	15,4
250	67,1	16,9
315	65,3	16,2
400	64,7	22,8
500	65,0	26,8
630	65,3	28,8
800	66,4	28,0
1000	67,8	31,0
1250	67,7	35,5
1600	68,2	38,6
2000	68,8	39,4
2500	68,6	44,7
3150	67,9	50,8
4000	66,9	50,2
5000	64,4	51,8





DAMTEC® sonic ROOF CONSTRUCTION 03

Test report number 137-452

INSULATION PIR / WATERPROOFING BITUMEN SHEETS

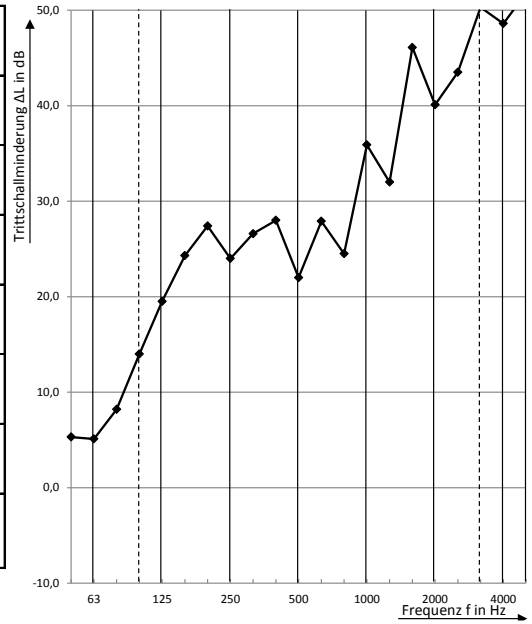
IMPACT SOUND IMPROVEMENT **ΔLw = 35 dB**

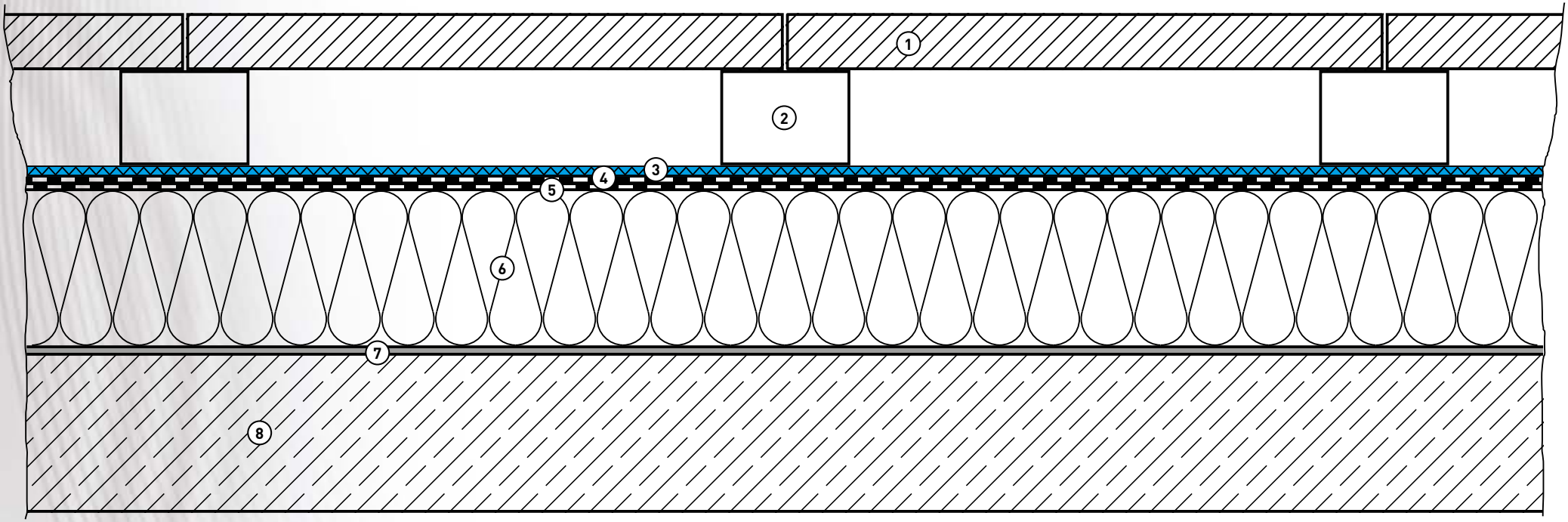
KRAITEC®

Scale 1:5

1. Concrete sidewalk slab, smooth 500 x 500 x 50 mm
2. PA stilt bearing, adjustable
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Insulation PIR FA WLS 024, 140 mm
7. Bitumen vapor barrier V60 S4 +AL
8. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	5,3
63	62,7	5,1
80	57,4	8,2
100	57,2	14,0
125	67,5	19,5
160	62,6	24,3
200	64,1	27,4
250	67,1	24,0
315	65,3	26,6
400	64,7	28,0
500	65,0	22,0
630	65,3	27,9
800	66,4	24,5
1000	67,8	35,9
1250	67,7	32,0
1600	68,2	46,1
2000	68,8	40,1
2500	68,6	43,5
3150	67,9	50,3
4000	66,9	48,6
5000	64,4	51,8





DAMTEC® sonic

DAMTEC® sonic ROOF CONSTRUCTION 04

Test report number 137-453

INSULATION EPS / WATERPROOFING BITUMEN SHEETS

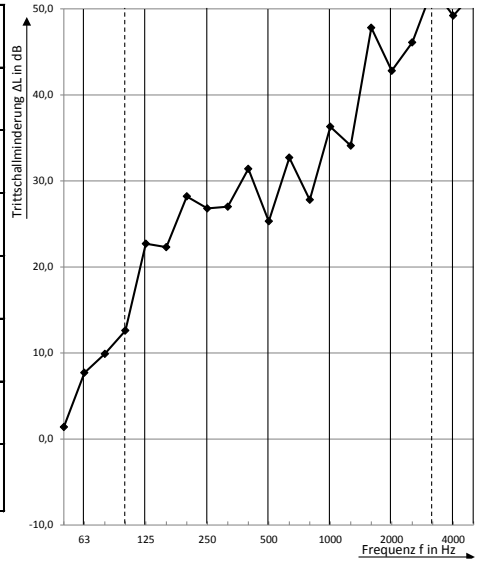
IMPACT SOUND IMPROVEMENT **ΔLw = 37 dB**

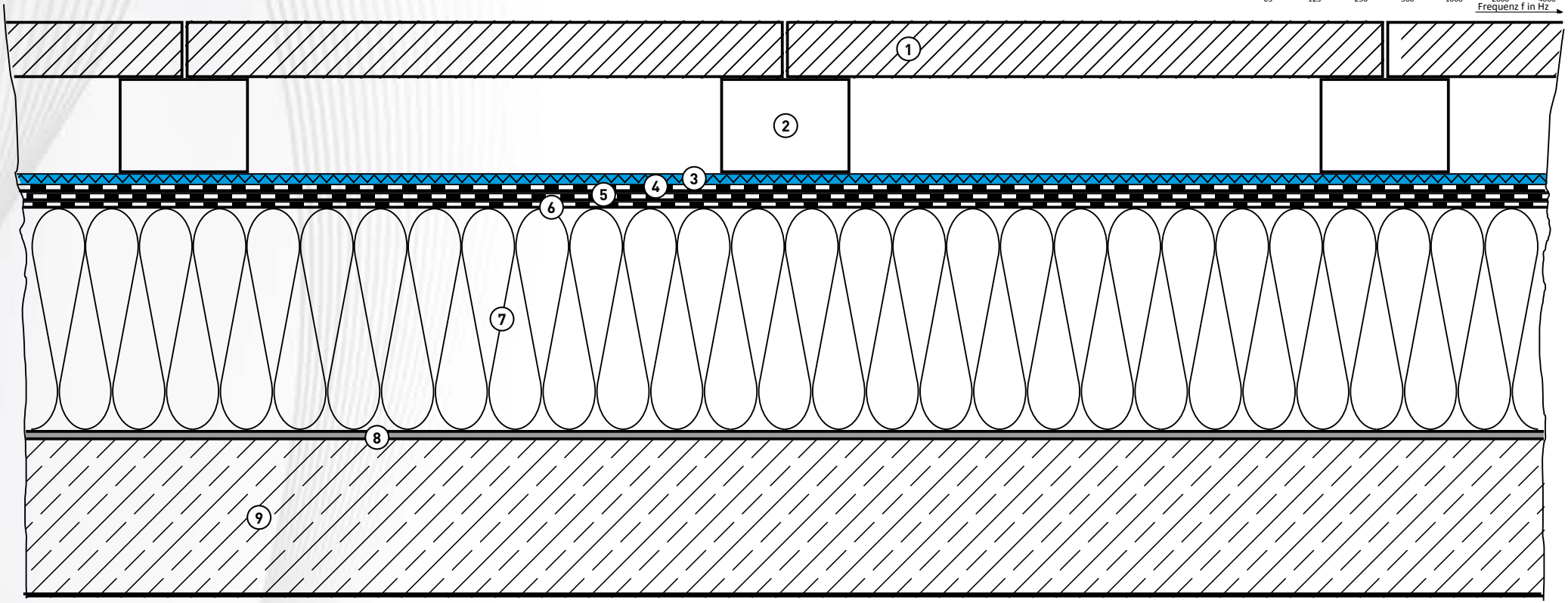
KRAITEC®

Scale 1:5

1. Concrete sidewalk slab, smooth 500 x 500 x 50 mm
2. PA stilt bearing, adjustable
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Laminate layer G 200 DD, sand
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	1,4
63	62,7	7,7
80	57,4	9,9
100	57,2	12,6
125	67,5	22,7
160	62,6	22,3
200	64,1	28,2
250	67,1	26,8
315	65,3	27,0
400	64,7	31,4
500	65,0	25,3
630	65,3	32,7
800	66,4	27,8
1000	67,8	36,3
1250	67,7	34,1
1600	68,2	47,8
2000	68,8	42,8
2500	68,6	46,1
3150	67,9	52,4
4000	66,9	49,2
5000	64,4	51,9





DAMTEC® sonic ROOF CONSTRUCTION 05

Test report number 137-454

INSULATION PIR / WATERPROOFING BITUMEN SHEETS

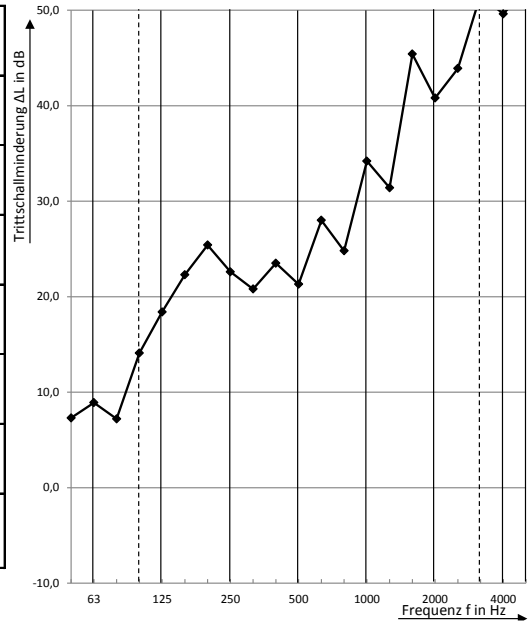
IMPACT SOUND IMPROVEMENT **ΔLw = 34 dB**

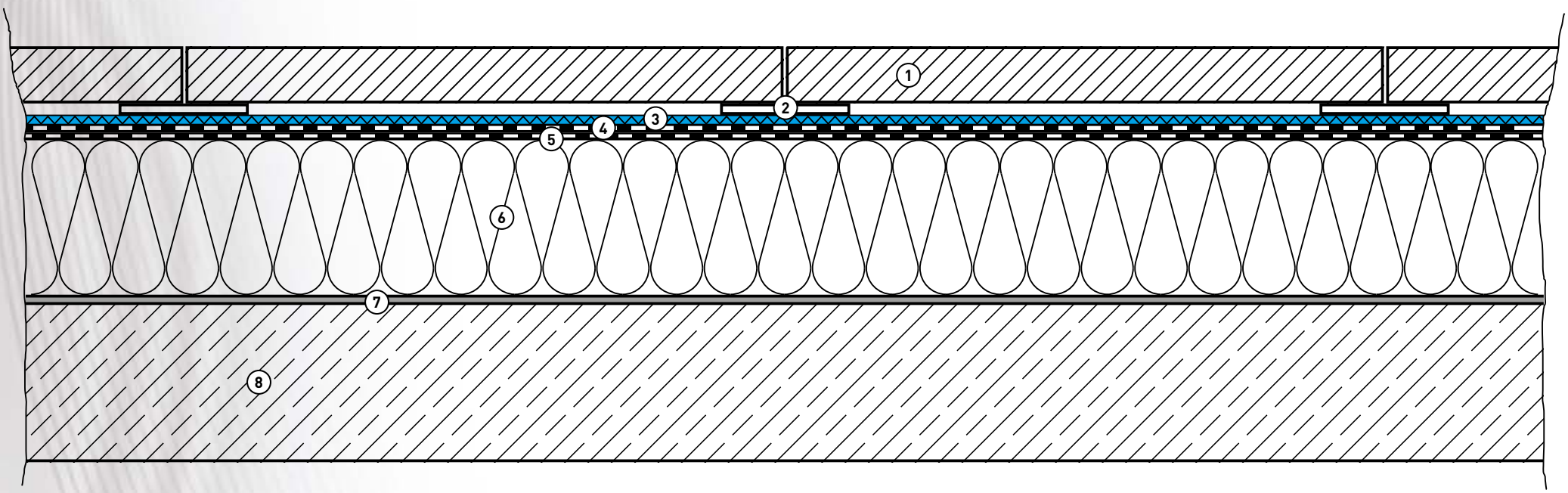
KRAITEC®

Scale 1:5

1. Concrete sidewalk slab, smooth 500 x 500 x 50 mm
2. Rubber disks
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Insulation PIR FA WLS 024, 140 mm
7. Bitumen vapor barrier V60 S4 +AL
8. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	7,3
63	62,7	8,9
80	57,4	7,2
100	57,2	14,1
125	67,5	18,4
160	62,6	22,3
200	64,1	25,4
250	67,1	22,6
315	65,3	20,8
400	64,7	23,5
500	65,0	21,3
630	65,3	28,0
800	66,4	24,8
1000	67,8	34,2
1250	67,7	31,4
1600	68,2	45,4
2000	68,8	40,8
2500	68,6	43,9
3150	67,9	51,6
4000	66,9	49,6
5000	64,4	52,4





DAMTEC® sonic ROOF CONSTRUCTION 06

Test report number 137-455

INSULATION EPS / **WATERPROOFING** BITUMEN SHEETS

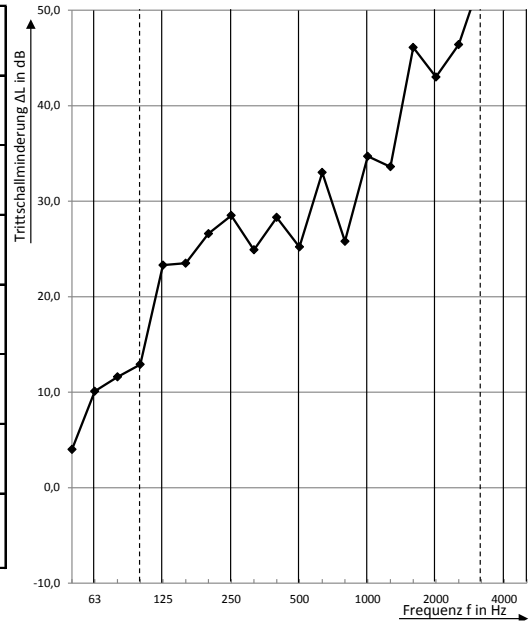
IMPACT SOUND IMPROVEMENT **ΔLw = 37 dB**

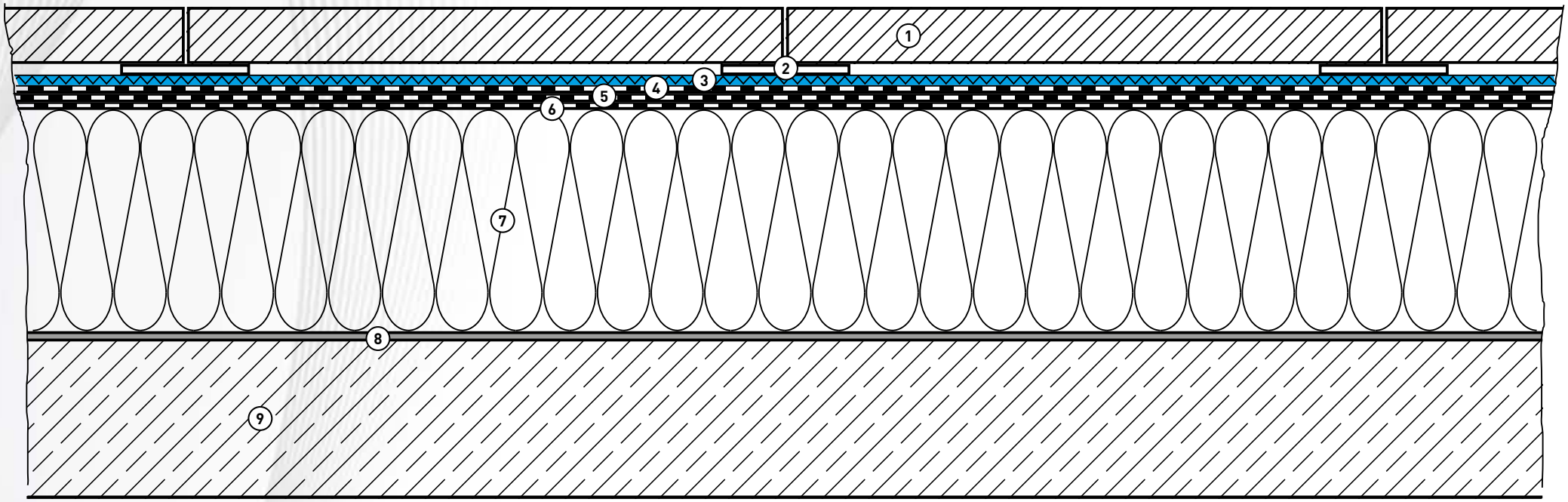
KRAITEC®

Scale 1:5

1. Concrete sidewalk slab, smooth 500 x 500 x 50 mm
2. Rubber disks
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Laminate layer G 200 DD, sand
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	4,0
63	62,7	10,1
80	57,4	11,6
100	57,2	12,9
125	67,5	23,3
160	62,6	23,5
200	64,1	26,6
250	67,1	28,5
315	65,3	24,9
400	64,7	28,3
500	65,0	25,2
630	65,3	33,0
800	66,4	25,8
1000	67,8	34,7
1250	67,7	33,6
1600	68,2	46,1
2000	68,8	43,0
2500	68,6	46,4
3150	67,9	53,4
4000	66,9	50,1
5000	64,4	52,5





DAMTEC® sonic ROOF CONSTRUCTION 07

Test report number 137-456

INSULATION PIR / WATERPROOFING BITUMEN SHEETS

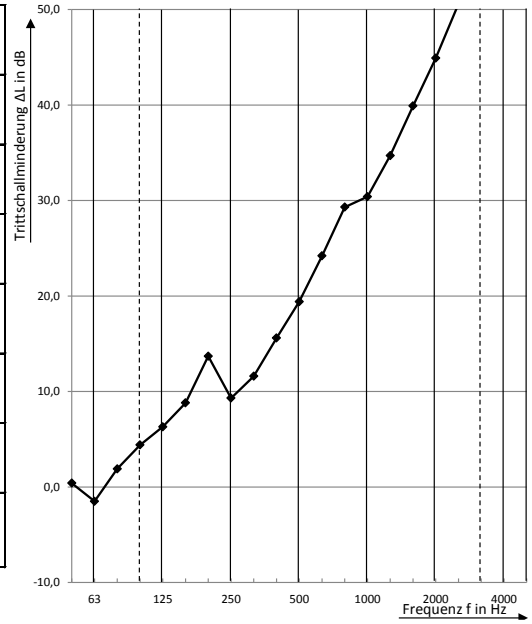
IMPACT SOUND IMPROVEMENT **ΔLw = 25 dB**

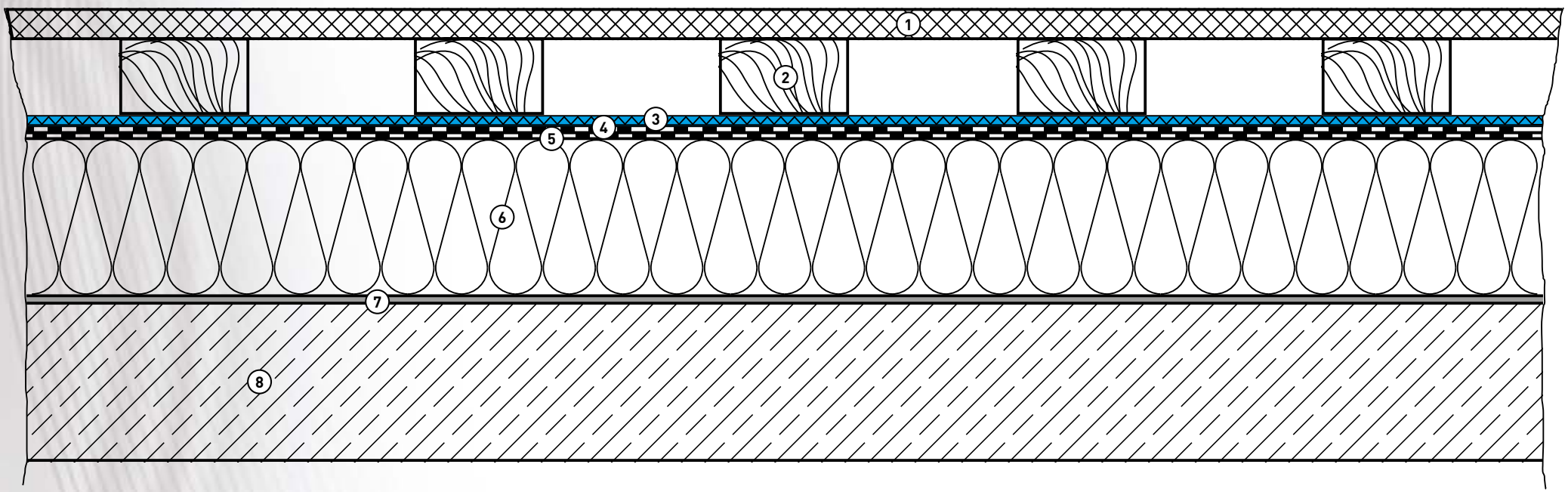
KRAITEC®

Scale 1:5

1. Wood planking, larch, 28 mm, center distance 60 cm
2. Support laths 40 x 80 mm
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Insulation PIR FA WLS 024, 140 mm
7. Bitumen vapor barrier V60 S4 +AL
8. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	0,4
63	62,7	-1,5
80	57,4	1,9
100	57,2	4,4
125	67,5	6,3
160	62,6	8,8
200	64,1	13,7
250	67,1	9,3
315	65,3	11,6
400	64,7	15,6
500	65,0	19,4
630	65,3	24,2
800	66,4	29,3
1000	67,8	30,4
1250	67,7	34,7
1600	68,2	39,9
2000	68,8	44,9
2500	68,6	50,6
3150	67,9	55,0
4000	66,9	56,5
5000	64,4	54,4





DAMTEC® sonic ROOF CONSTRUCTION 08

Test report number 137-457

INSULATION EPS / **WATERPROOFING** BITUMEN SHEETS

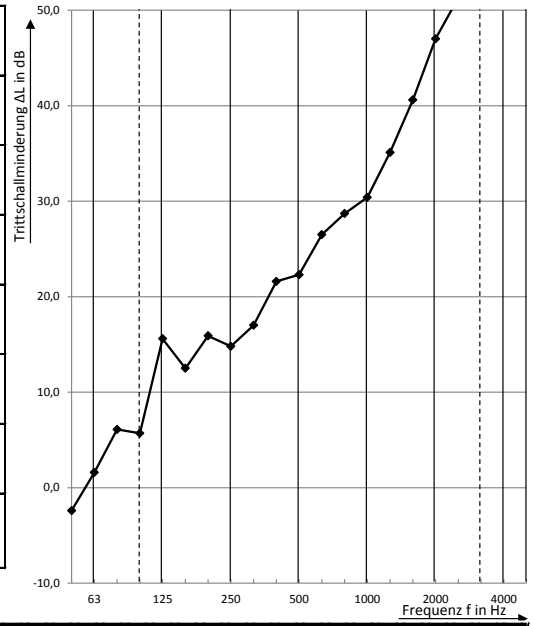
IMPACT SOUND IMPROVEMENT **ΔLw = 30 dB**

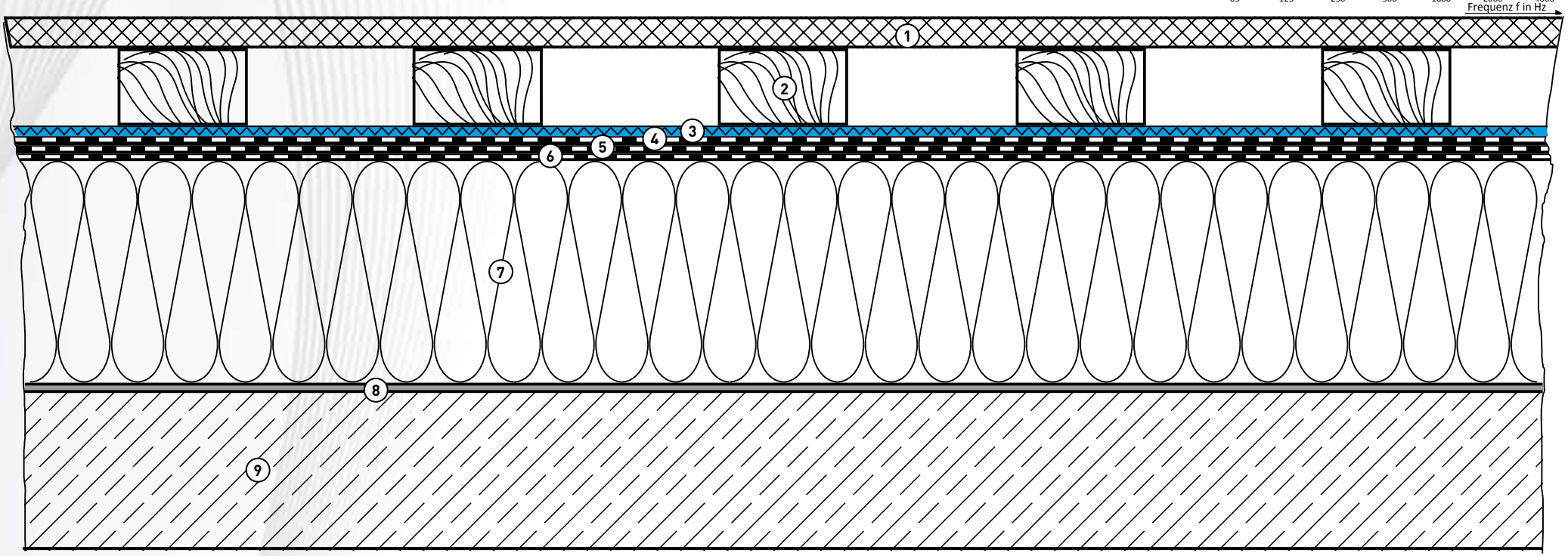
KRAITEC®

Scale 1:5

1. Wood planking, larch, 28 mm, center distance 60 cm
2. Support laths 40 x 80 mm, center distance 600 mm
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Laminate layer G 200 DD, sand
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	-2,4
63	62,7	1,6
80	57,4	6,1
100	57,2	5,7
125	67,5	15,6
160	62,6	12,5
200	64,1	15,9
250	67,1	14,8
315	65,3	17,0
400	64,7	21,6
500	65,0	22,3
630	65,3	26,5
800	66,4	28,7
1000	67,8	30,4
1250	67,7	35,1
1600	68,2	40,6
2000	68,8	47,0
2500	68,6	51,3
3150	67,9	54,8
4000	66,9	56,7
5000	64,4	54,7





DAMTEC® sonic ROOF CONSTRUCTION 09

Test report number 137-458

INSULATION PIR / WATERPROOFING FOIL

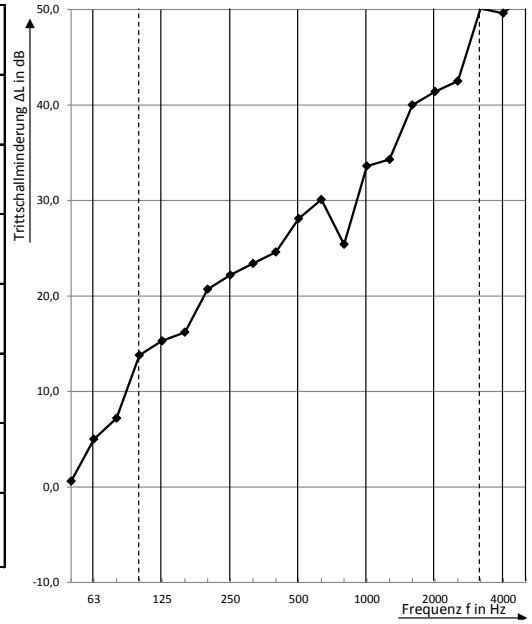
IMPACT SOUND IMPROVEMENT **ΔLw = 34 dB**

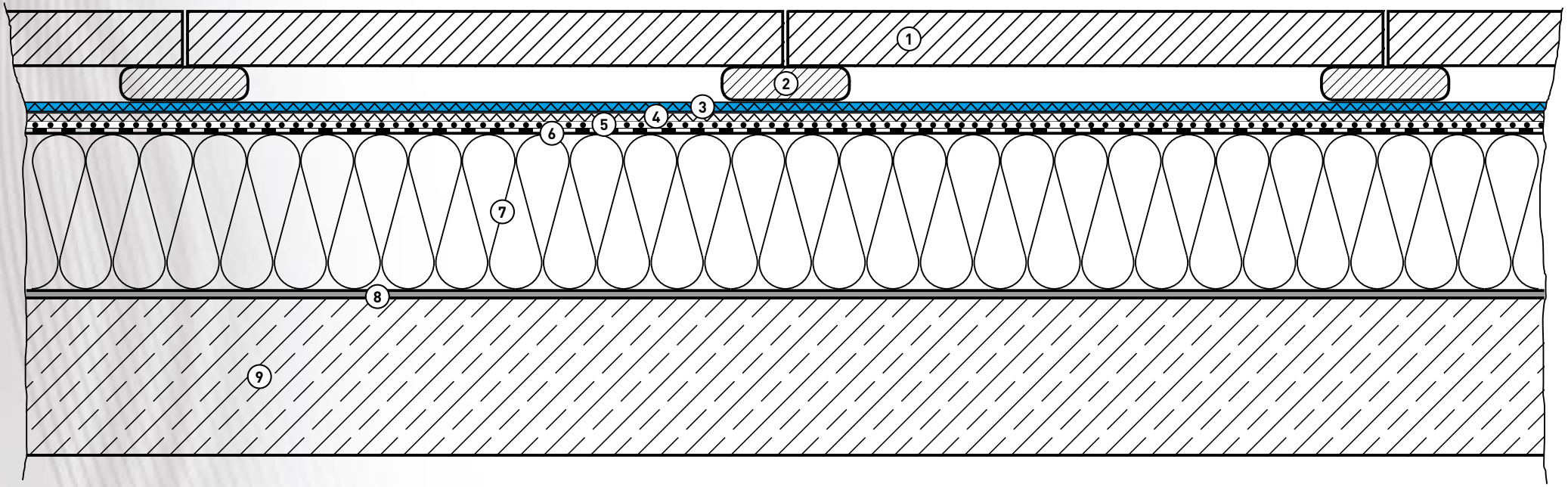
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. Mortar sacks
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation PIR FA WLS 024, 140 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	0,6
63	62,7	5,0
80	57,4	7,2
100	57,2	13,8
125	67,5	15,3
160	62,6	16,2
200	64,1	20,7
250	67,1	22,2
315	65,3	23,4
400	64,7	24,6
500	65,0	28,1
630	65,3	30,1
800	66,4	25,4
1000	67,8	33,6
1250	67,7	34,3
1600	68,2	40,0
2000	68,8	41,4
2500	68,6	42,5
3150	67,9	50,1
4000	66,9	49,6
5000	64,4	51,7





DAMTEC® sonic ROOF CONSTRUCTION 10

Test report number 137-459

INSULATION EPS / WATERPROOFING FOIL

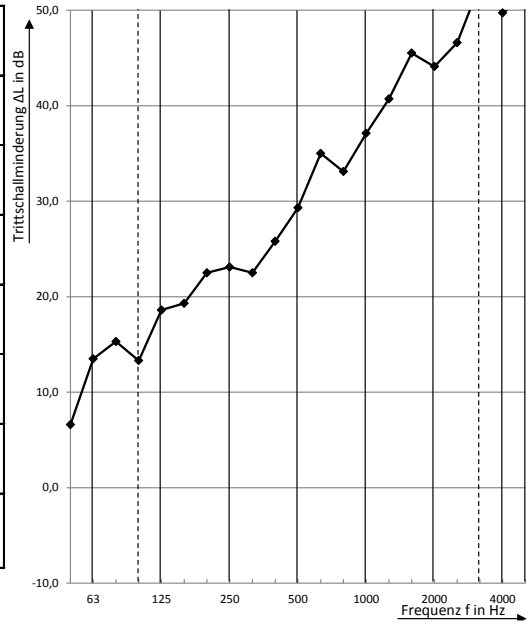
IMPACT SOUND IMPROVEMENT **ΔLw = 36 dB**

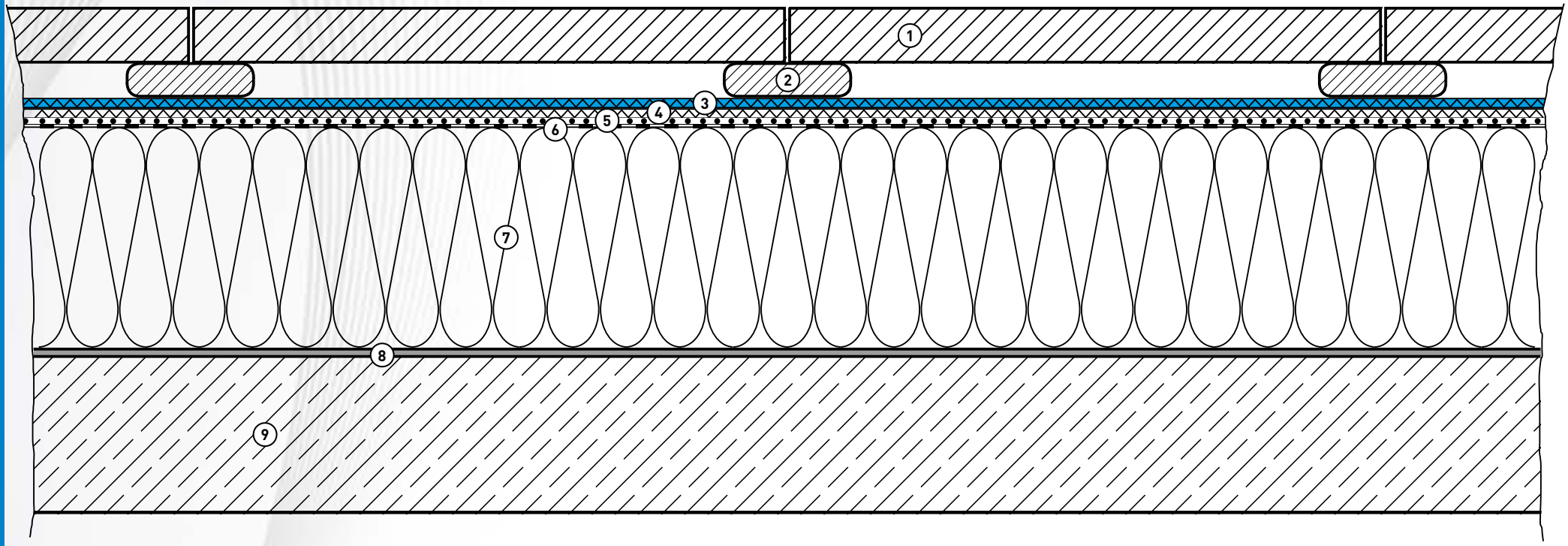
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. Mortar sacks
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	6,6
63	62,7	13,5
80	57,4	15,3
100	57,2	13,3
125	67,5	18,6
160	62,6	19,3
200	64,1	22,5
250	67,1	23,1
315	65,3	22,5
400	64,7	25,8
500	65,0	29,3
630	65,3	35,0
800	66,4	33,1
1000	67,8	37,1
1250	67,7	40,7
1600	68,2	45,5
2000	68,8	44,1
2500	68,6	46,6
3150	67,9	52,7
4000	66,9	49,7
5000	64,4	51,6





DAMTEC® sonic ROOF CONSTRUCTION 11

Test report number 137-460

INSULATION PIR / WATERPROOFING FOIL

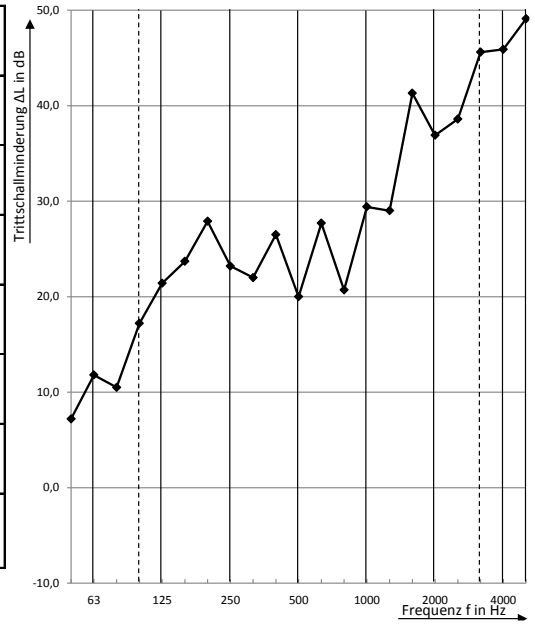
IMPACT SOUND IMPROVEMENT **ΔLw = 33 dB**

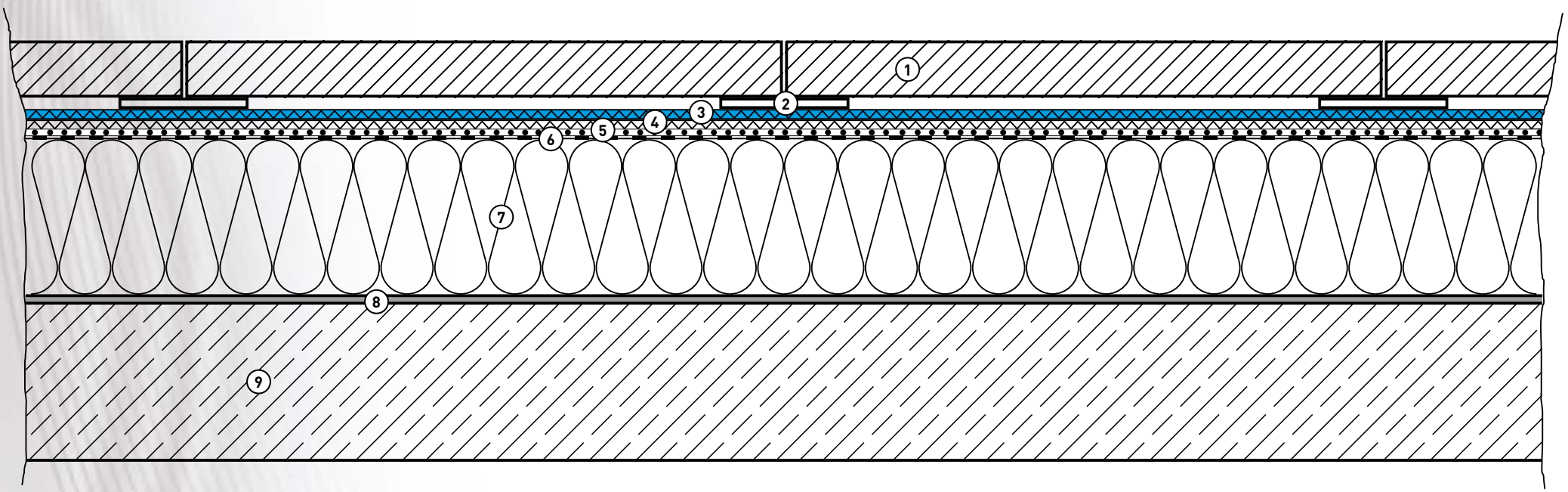
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. Rubber disks
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation PIR FA WLS 024, 140 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	7,2
63	62,7	11,8
80	57,4	10,5
100	57,2	17,2
125	67,5	21,4
160	62,6	23,7
200	64,1	27,9
250	67,1	23,2
315	65,3	22,0
400	64,7	26,5
500	65,0	20,0
630	65,3	27,7
800	66,4	20,7
1000	67,8	29,4
1250	67,7	29,0
1600	68,2	41,3
2000	68,8	36,9
2500	68,6	38,6
3150	67,9	45,6
4000	66,9	45,9
5000	64,4	49,1





DAMTEC® sonic ROOF CONSTRUCTION 12

Test report number 137-461

INSULATION EPS / WATERPROOFING FOIL

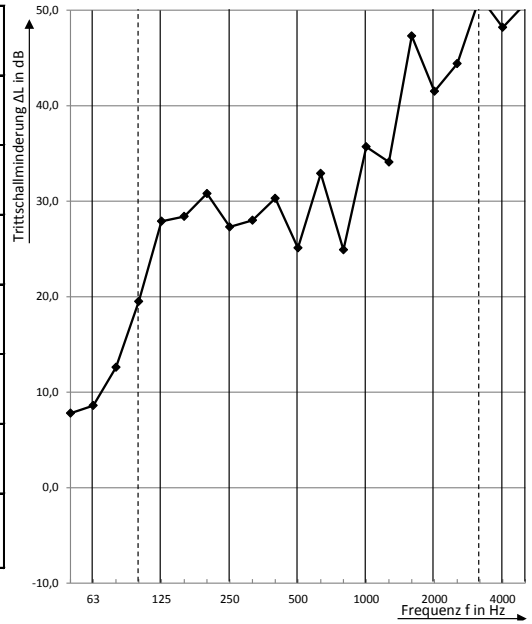
IMPACT SOUND IMPROVEMENT **ΔLw = 38 dB**

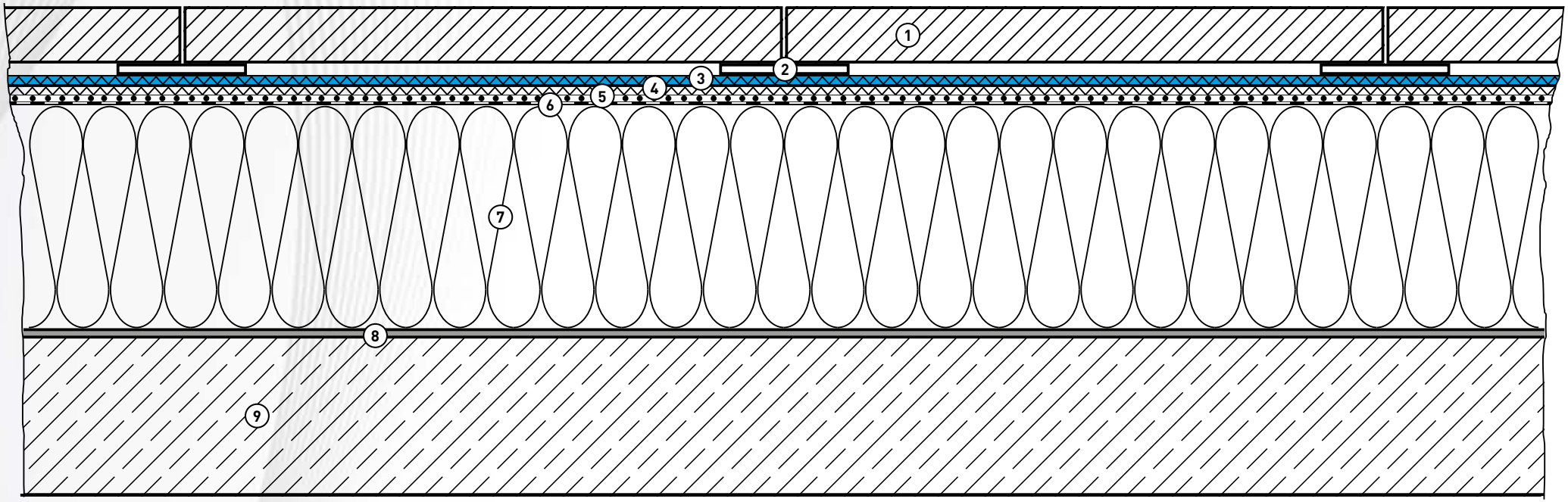
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. Rubber disks
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	7,8
63	62,7	8,6
80	57,4	12,6
100	57,2	19,5
125	67,5	27,9
160	62,6	28,4
200	64,1	30,8
250	67,1	27,3
315	65,3	28,0
400	64,7	30,3
500	65,0	25,1
630	65,3	32,9
800	66,4	24,9
1000	67,8	35,7
1250	67,7	34,1
1600	68,2	47,3
2000	68,8	41,5
2500	68,6	44,4
3150	67,9	51,4
4000	66,9	48,2
5000	64,4	50,7





DAMTEC® sonic ROOF CONSTRUCTION 13

Test report number 137-462

INSULATION PIR / WATERPROOFING FOIL

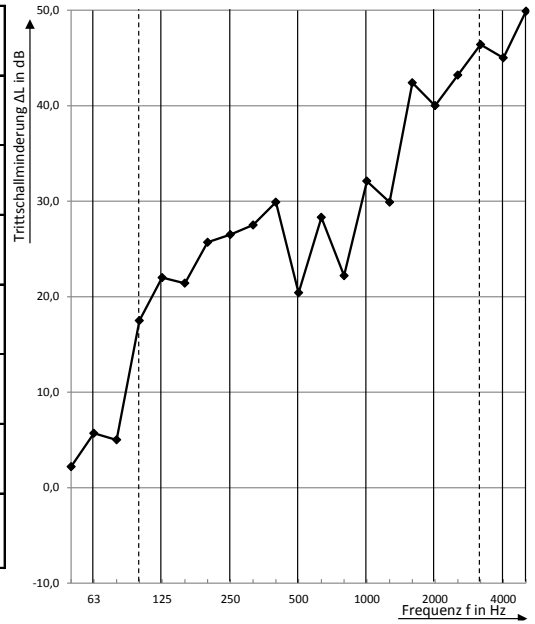
IMPACT SOUND IMPROVEMENT **ΔLw = 35 dB**

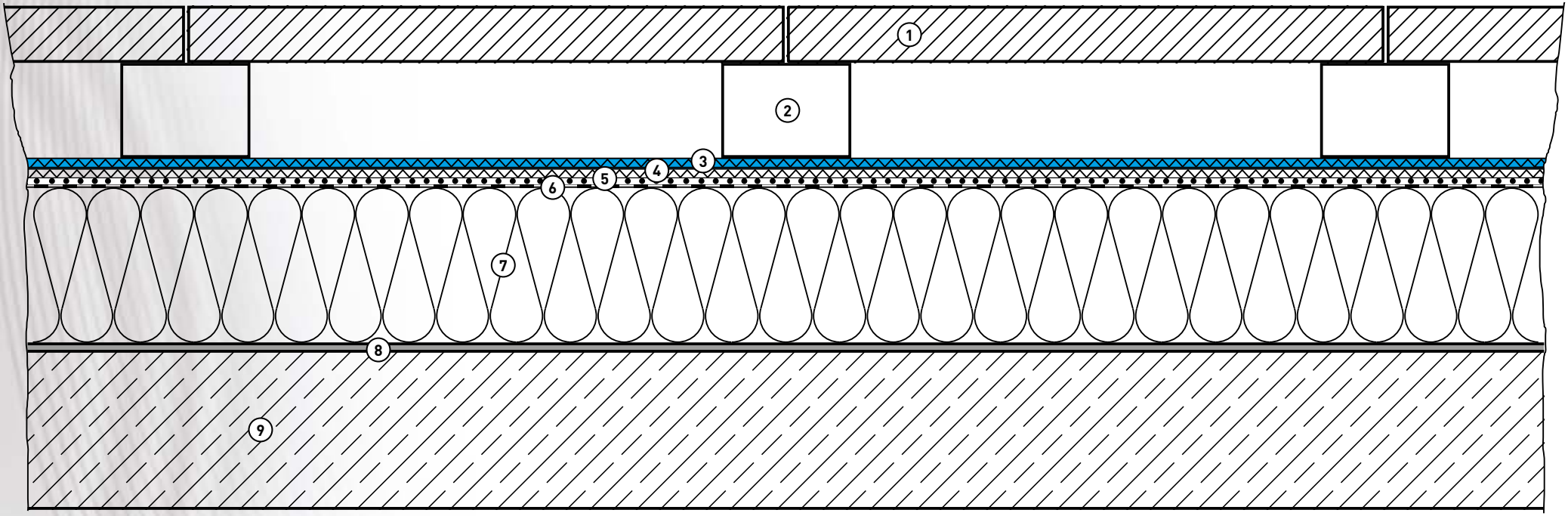
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. PA stilt bearing, adjustable
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation PIR FA WLS 024, 140 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	2,2
63	62,7	5,7
80	57,4	5,0
100	57,2	17,5
125	67,5	22,0
160	62,6	21,4
200	64,1	25,7
250	67,1	26,5
315	65,3	27,5
400	64,7	29,9
500	65,0	20,4
630	65,3	28,3
800	66,4	22,2
1000	67,8	32,1
1250	67,7	29,9
1600	68,2	42,4
2000	68,8	40,0
2500	68,6	43,2
3150	67,9	46,4
4000	66,9	45,0
5000	64,4	49,9





DAMTEC® sonic ROOF CONSTRUCTION 14

Test report number 137-463

INSULATION EPS / WATERPROOFING FOIL

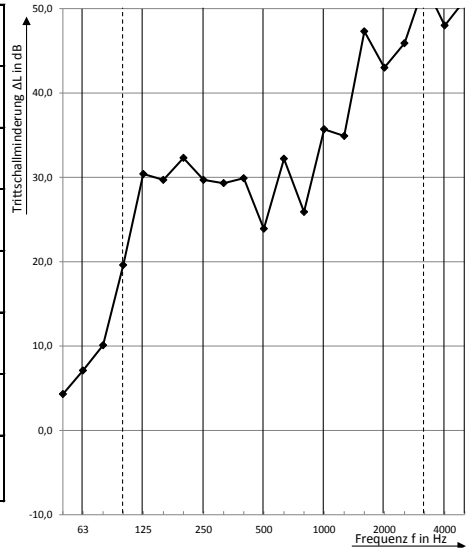
IMPACT SOUND IMPROVEMENT **ΔLw = 39 dB**

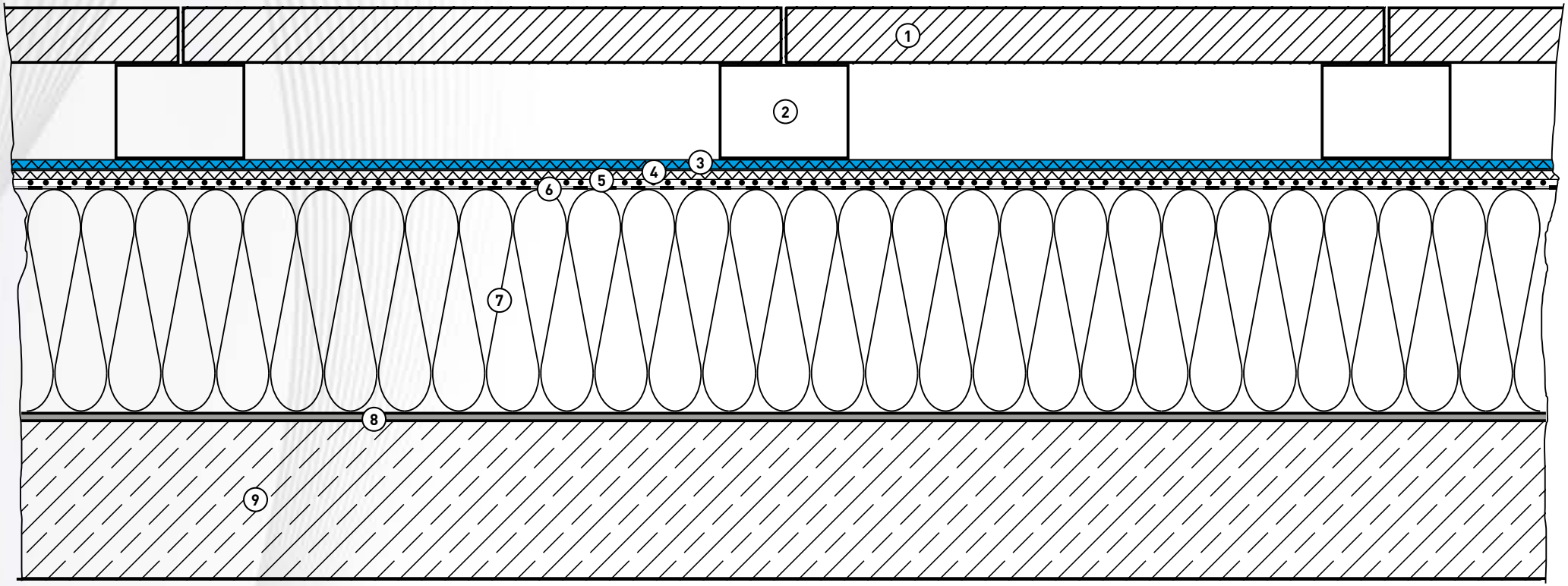
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. PA stilt bearing, adjustable
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	4,3
63	62,7	7,1
80	57,4	10,1
100	57,2	19,6
125	67,5	30,4
160	62,6	29,7
200	64,1	32,3
250	67,1	29,7
315	65,3	29,3
400	64,7	29,9
500	65,0	23,9
630	65,3	32,2
800	66,4	25,9
1000	67,8	35,7
1250	67,7	34,9
1600	68,2	47,3
2000	68,8	43,0
2500	68,6	45,9
3150	67,9	52,9
4000	66,9	48,0
5000	64,4	51,0





DAMTEC® sonic ROOF CONSTRUCTION 15

Test report number 137-464

INSULATION PIR / WATERPROOFING FOIL

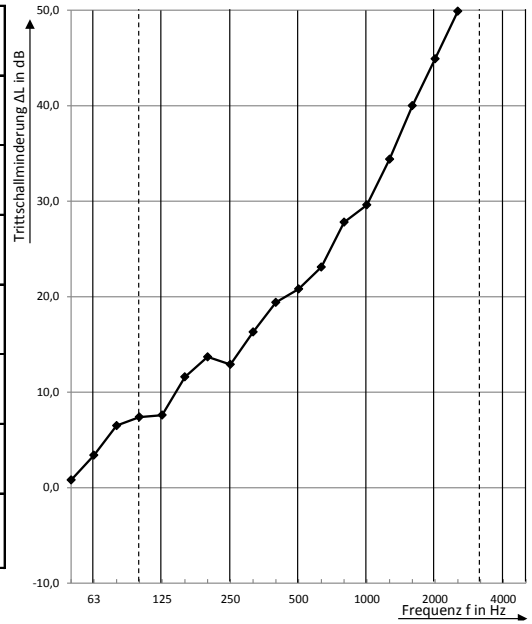
IMPACT SOUND IMPROVEMENT **ΔLw = 28 dB**

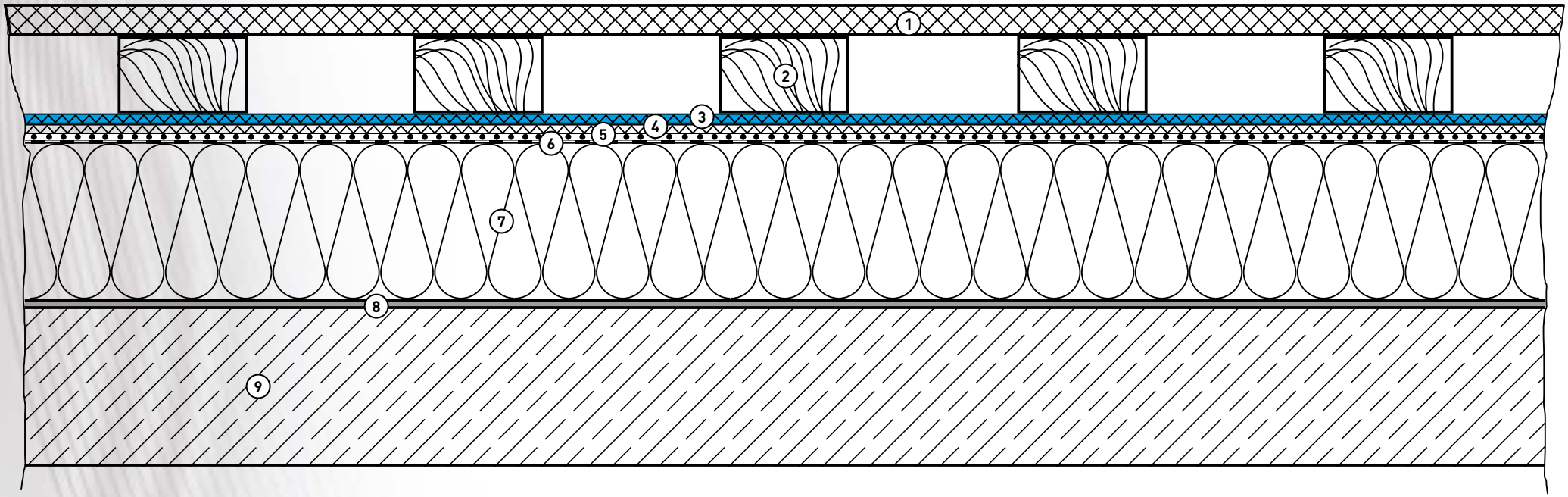
KRAITEC®

Scale 1:5

1. Wood planking, larch, 28 mm, center distance 60 cm
2. Support laths, 40 x 80 mm
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation PIR FA WLS 024, 140 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	0,8
63	62,7	3,4
80	57,4	6,5
100	57,2	7,4
125	67,5	7,6
160	62,6	11,6
200	64,1	13,7
250	67,1	12,9
315	65,3	16,3
400	64,7	19,4
500	65,0	20,8
630	65,3	23,1
800	66,4	27,8
1000	67,8	29,6
1250	67,7	34,4
1600	68,2	40,0
2000	68,8	44,9
2500	68,6	49,9
3150	67,9	54,4
4000	66,9	56,5
5000	64,4	54,4





DAMTEC® sonic ROOF CONSTRUCTION 16

Test report number 137-465

INSULATION EPS / WATERPROOFING FOIL

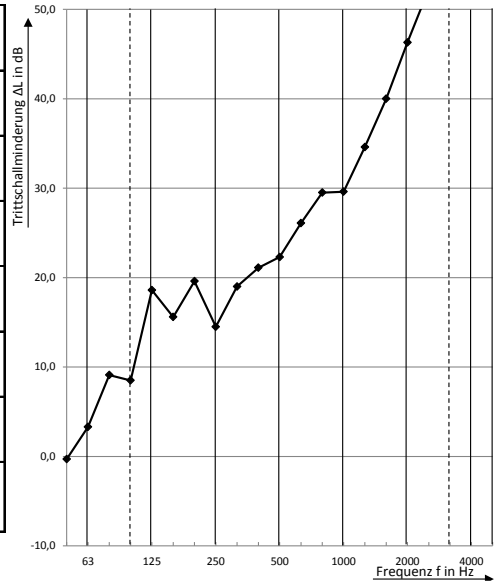
IMPACT SOUND IMPROVEMENT **ΔLw = 32 dB**

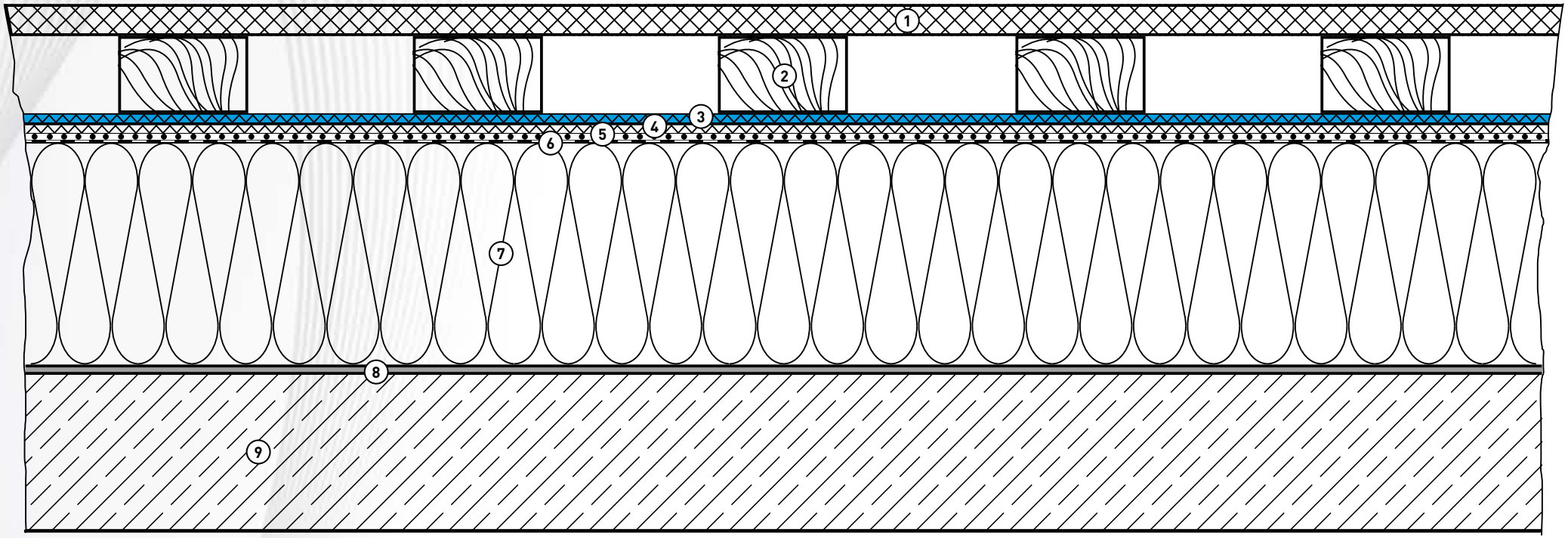
KRAITEC®

Scale 1:5

1. Wood planking, larch, 28 mm, center distance 60 cm
2. Support laths 40 x 80 mm, center distance 600 mm
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	-0,3
63	62,7	3,3
80	57,4	9,1
100	57,2	8,5
125	67,5	18,6
160	62,6	15,6
200	64,1	19,6
250	67,1	14,5
315	65,3	19,0
400	64,7	21,1
500	65,0	22,3
630	65,3	26,1
800	66,4	29,5
1000	67,8	29,6
1250	67,7	34,6
1600	68,2	40,0
2000	68,8	46,3
2500	68,6	52,3
3150	67,9	55,6
4000	66,9	56,6
5000	64,4	54,2





DAMTEC® sonic ROOF CONSTRUCTION 17

Test report number 137-466

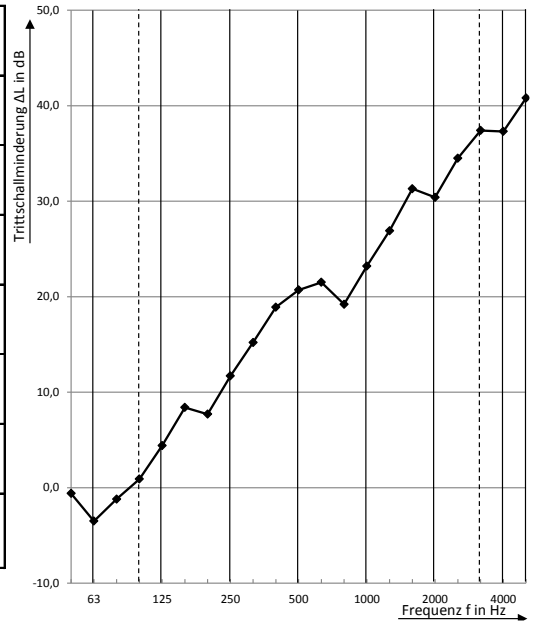
IMPACT SOUND IMPROVEMENT **ΔLw = 24 dB**

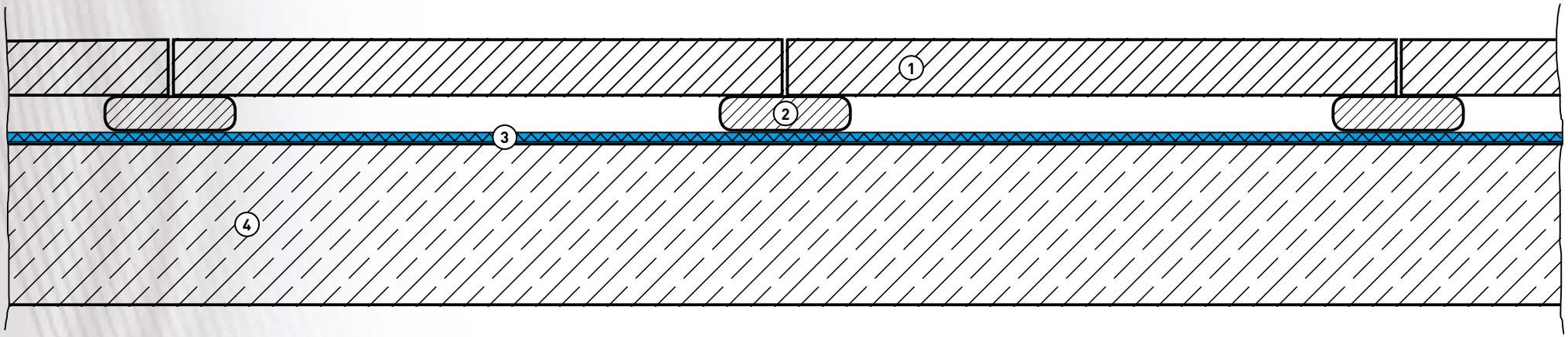
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. Mortar sacks
3. **DAMTEC® sonic,** 8 mm
4. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	-0,6
63	62,7	-3,5
80	57,4	-1,2
100	57,2	0,9
125	67,5	4,4
160	62,6	8,4
200	64,1	7,7
250	67,1	11,7
315	65,3	15,2
400	64,7	18,9
500	65,0	20,7
630	65,3	21,5
800	66,4	19,2
1000	67,8	23,2
1250	67,7	26,9
1600	68,2	31,3
2000	68,8	30,4
2500	68,6	34,5
3150	67,9	37,4
4000	66,9	37,3
5000	64,4	40,8





DAMTEC® sonic ROOF CONSTRUCTION 18

Test report number 137-467

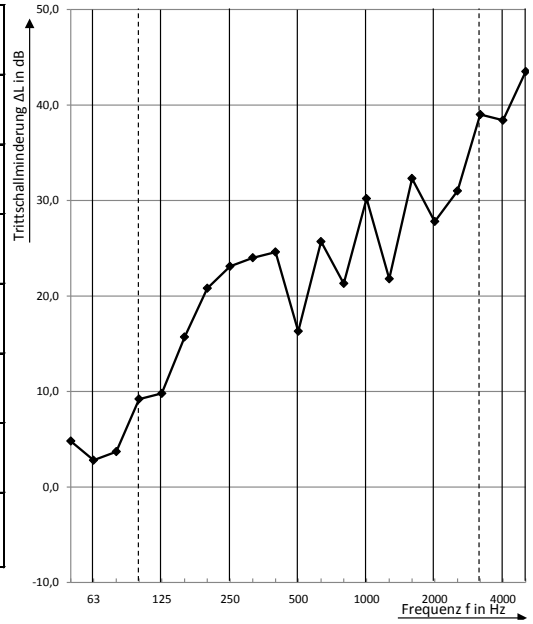
IMPACT SOUND IMPROVEMENT **ΔLw = 27 dB**

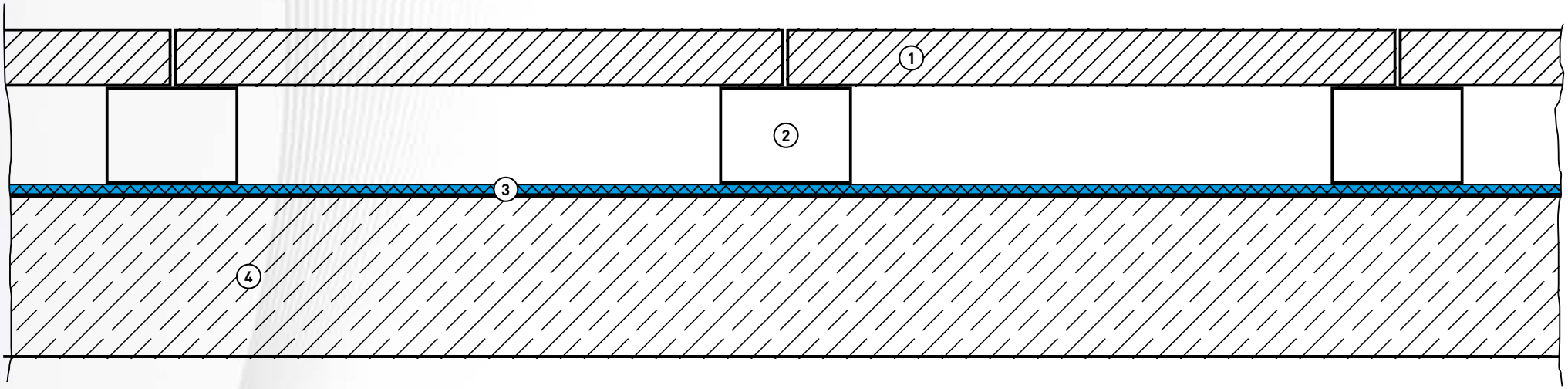
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. PA stilt bearing, adjustable
3. **DAMTEC® sonic,** 8 mm
4. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	4,8
63	62,7	2,8
80	57,4	3,7
100	57,2	9,2
125	67,5	9,8
160	62,6	15,7
200	64,1	20,8
250	67,1	23,1
315	65,3	24,0
400	64,7	24,6
500	65,0	16,3
630	65,3	25,7
800	66,4	21,3
1000	67,8	30,2
1250	67,7	21,8
1600	68,2	32,3
2000	68,8	27,8
2500	68,6	31,0
3150	67,9	39,0
4000	66,9	38,4
5000	64,4	43,5





DAMTEC® sonic ROOF CONSTRUCTION 19

Test report number 137-468

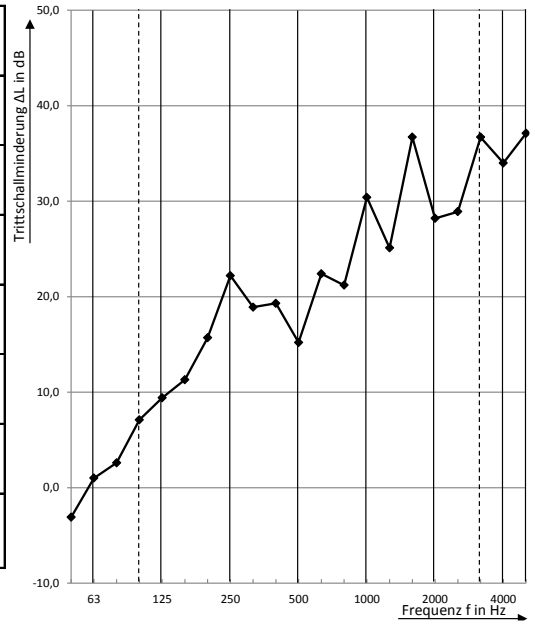
IMPACT SOUND IMPROVEMENT **ΔLw = 26 dB**

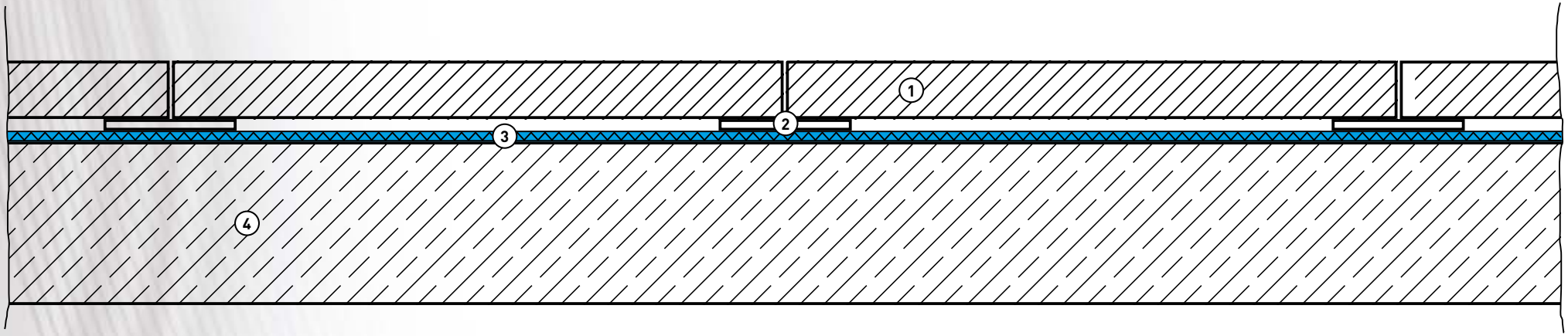
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. Rubber disks
3. **DAMTEC® sonic,** 8 mm
4. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	-3,1
63	62,7	1,0
80	57,4	2,6
100	57,2	7,1
125	67,5	9,4
160	62,6	11,3
200	64,1	15,7
250	67,1	22,2
315	65,3	18,9
400	64,7	19,3
500	65,0	15,2
630	65,3	22,4
800	66,4	21,2
1000	67,8	30,4
1250	67,7	25,1
1600	68,2	36,7
2000	68,8	28,2
2500	68,6	28,9
3150	67,9	36,7
4000	66,9	34,0
5000	64,4	37,1





DAMTEC® sonic ROOF CONSTRUCTION 20

Test report number 137-469

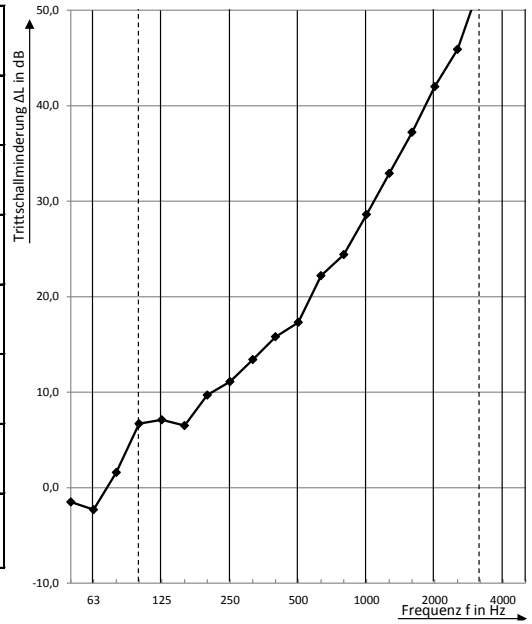
IMPACT SOUND IMPROVEMENT **ΔLw = 25 dB**

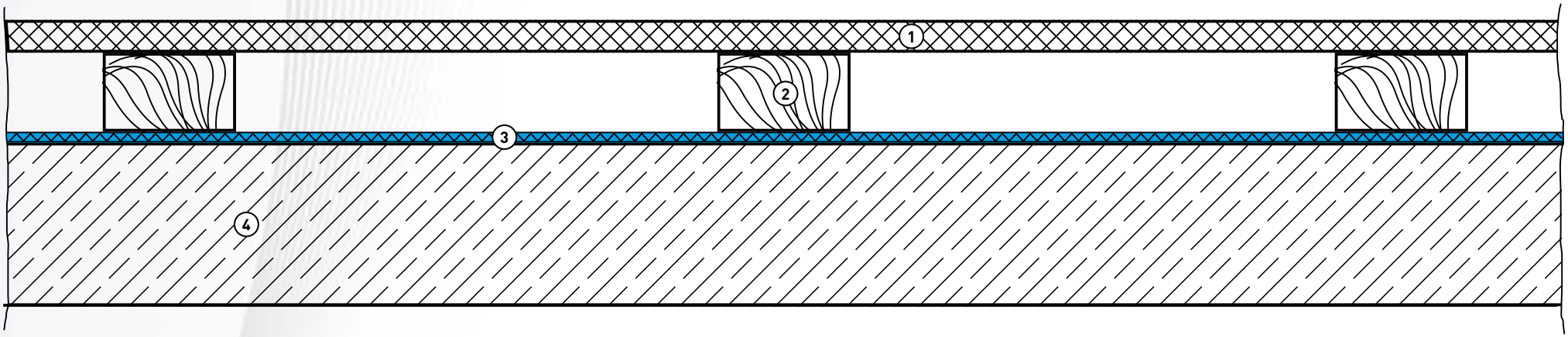
KRAITEC®

Scale 1:5

1. Wood planking, larch, 28 mm, center distance 60 cm
2. Support laths 40 x 80 mm, center distance 600 mm
3. **DAMTEC® sonic,** 8 mm
4. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	-1,5
63	62,7	-2,3
80	57,4	1,6
100	57,2	6,7
125	67,5	7,1
160	62,6	6,5
200	64,1	9,7
250	67,1	11,1
315	65,3	13,4
400	64,7	15,8
500	65,0	17,3
630	65,3	22,2
800	66,4	24,4
1000	67,8	28,6
1250	67,7	32,9
1600	68,2	37,2
2000	68,8	42,0
2500	68,6	45,9
3150	67,9	52,7
4000	66,9	55,2
5000	64,4	53,7





DAMTEC® sonic ROOF CONSTRUCTION 21

Test report number 1111/114 TS

IMPACT SOUND IMPROVEMENT **ΔLw = 34 dB**

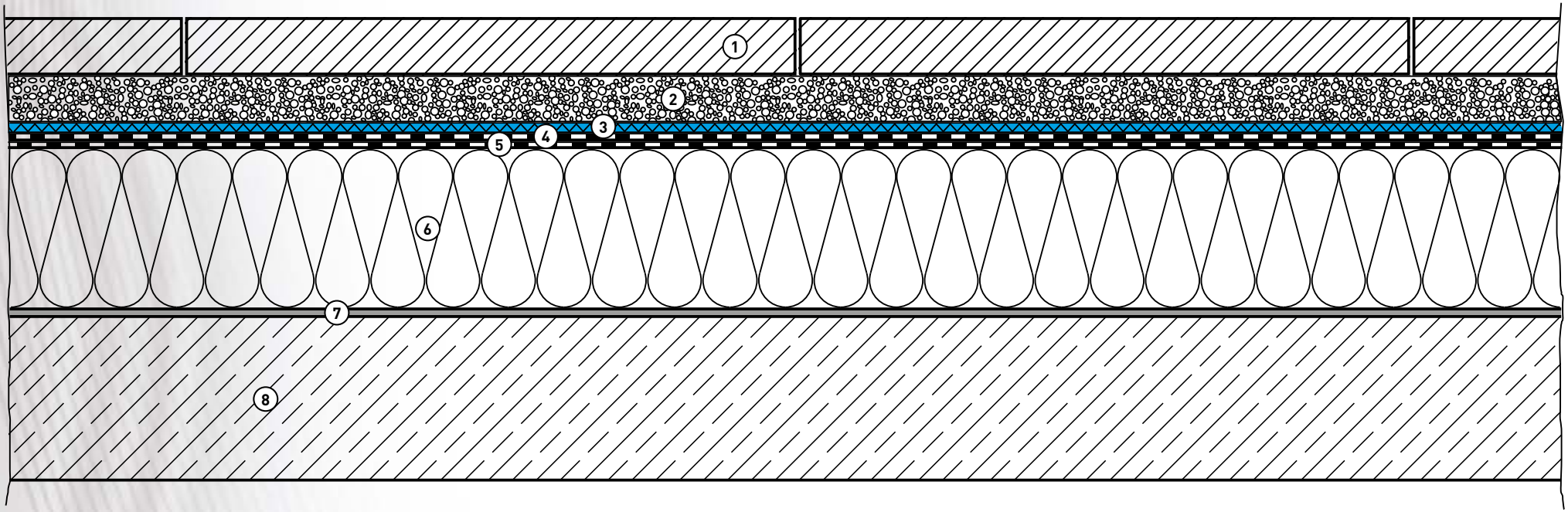
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 40 mm
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV 200 S 5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Insulation PIR FA WLS 024, 140 mm
7. Bitumen vapor barrier V60 S4 +AL
8. Concrete ceiling, 140 mm

Frequenz / Hz	$L_{n,0}$ Terzband dB	ΔL Terzband dB
50		4,9
63		-2,5
80		-1,7
100	61,0	7,5
125	61,4	14,0
160	64,8	18,1
200	63,7	19,1
250	65,4	21,8
315	65,6	24,1
400	66,1	25,1
500	66,0	26,9
630	66,4	33,8
800	66,3	34,0
1 000	66,2	40,8
1 250	66,6	39,2
1 600	67,2	43,9
2 000	67,1	46,3
2 500	67,0	48,6
3 150	66,4	54,8
4 000		–
5 000		–

Legende:
ΔL Trittschallminderung, in dB
f Frequenz in Hz



DAMTEC® sonic ROOF CONSTRUCTION 22

Test report number 1111/115 TS

IMPACT SOUND IMPROVEMENT **ΔLw = 37 dB**

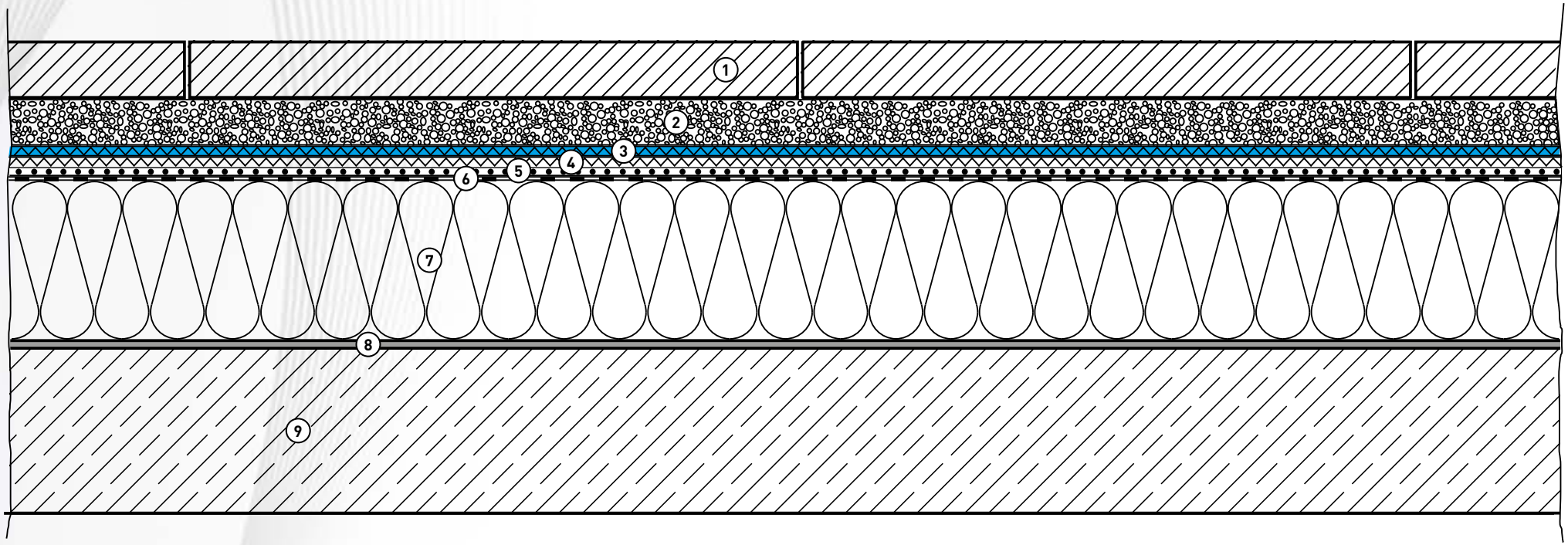
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 4 cm
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. Waterproofing Soprema Flagon SR 150
6. Rough glass fleece 120 g/m²
7. Insulation PIR FA WLS 024, 140 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz / Hz	$L_{n,0}$ Terzband dB	ΔL Terzband dB
50		6,3
63		3,2
80		9,0
100	61,0	18,6
125	61,4	18,6
160	64,8	21,0
200	63,7	22,2
250	65,4	26,3
315	65,6	26,5
400	66,1	24,0
500	66,0	23,1
630	66,4	34,3
800	66,3	35,6
1 000	66,2	41,0
1 250	66,6	40,2
1 600	67,2	45,9
2 000	67,1	47,4
2 500	67,0	49,2
3 150	66,4	55,5
4 000		–
5 000		–

Legende:
ΔL Trittschallminderung, in dB
/ Frequenz in Hz



DAMTEC® sonic ROOF CONSTRUCTION 23

Test report number 1111/116 TS

IMPACT SOUND IMPROVEMENT **ΔLw = 32 dB**

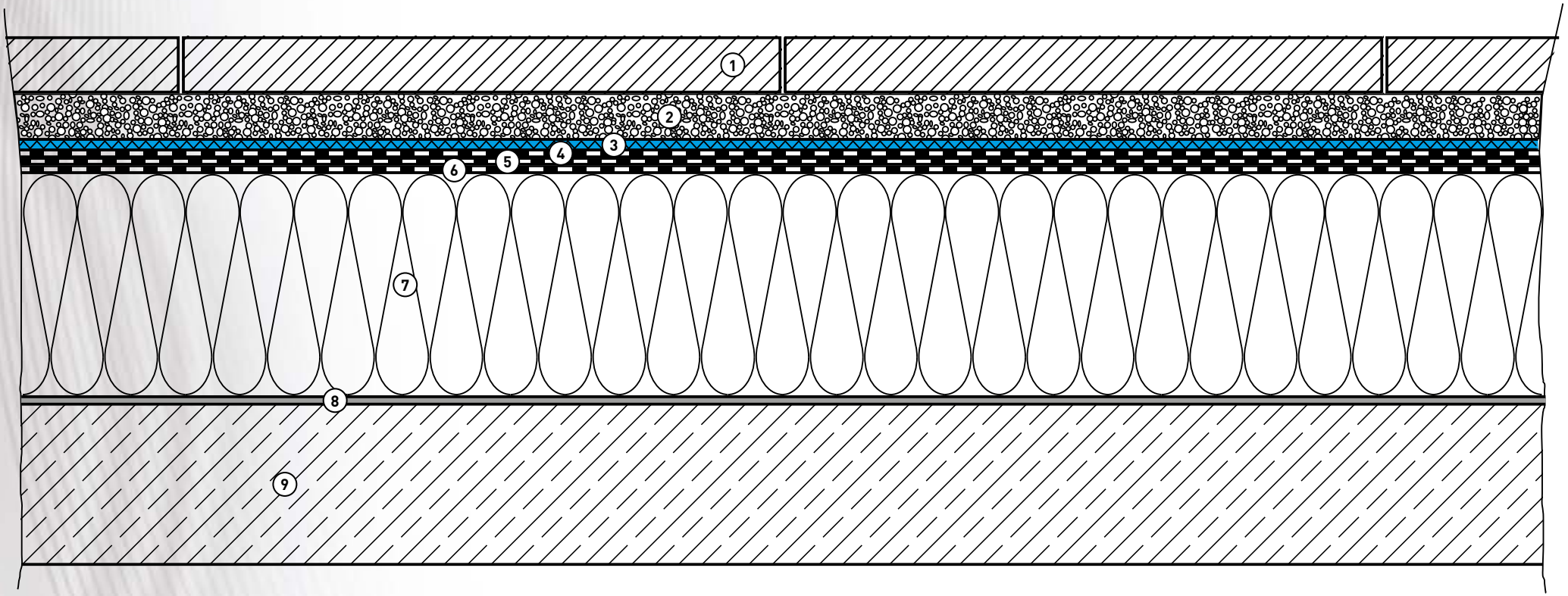
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 4 cm
3. **DAMTEC® sonic,** 8 mm
4. Upper layer PYE PV 200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Laminate layer G 200 DD, sand
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz / Hz	$L_{n,0}$ Terzband dB	ΔL Terzband dB
50		4,6
63		-0,7
80		3,5
100	61,0	10,2
125	61,4	15,9
160	64,8	14,7
200	63,7	15,7
250	65,4	17,5
315	65,6	22,2
400	66,1	23,8
500	66,0	24,4
630	66,4	31,8
800	66,3	32,4
1 000	66,2	34,8
1 250	66,6	36,7
1 600	67,2	48,0
2 000	67,1	47,4
2 500	67,0	47,8
3 150	66,4	44,3
4 000		–
5 000		–

Legende:
ΔL Trittschallminderung, in dB
f Frequenz in Hz



DAMTEC® sonic ROOF CONSTRUCTION 24

Test report number 1111/117 TS

IMPACT SOUND IMPROVEMENT **ΔLw = 37 dB**

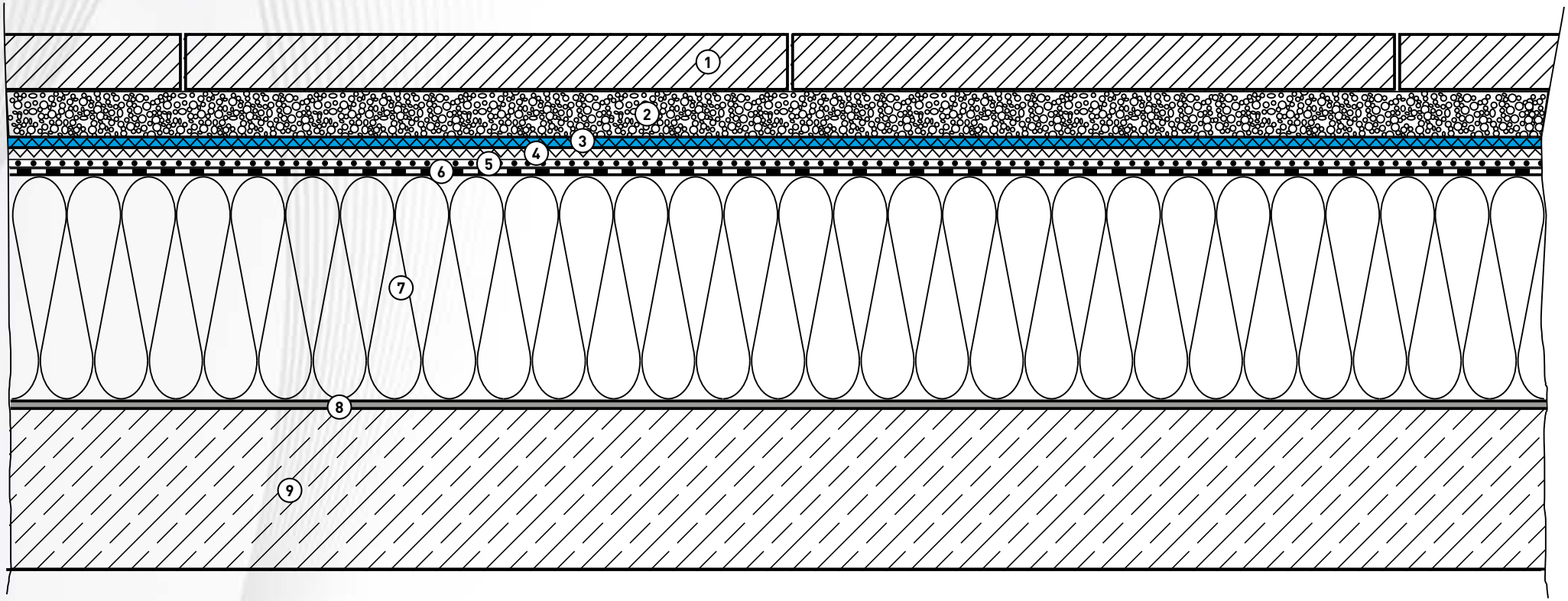
KRAITEC®

Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 4 cm
3. **DAMTEC® sonic,** 8 mm
4. Separating layer polyester fleece, 300 g/m²
5. Waterproofing Soprema Flagon SR 150
6. Rough glass fleece 120 g/m²
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz / Hz	$L_{n,0}$ Terzband dB	ΔL Terzband dB
50		7,0
63		10,2
80		12,4
100	61,0	16,5
125	61,4	21,6
160	64,8	20,9
200	63,7	22,4
250	65,4	24,2
315	65,6	26,7
400	66,1	26,4
500	66,0	24,3
630	66,4	33,8
800	66,3	34,6
1 000	66,2	41,1
1 250	66,6	40,6
1 600	67,2	42,9
2 000	67,1	47,0
2 500	67,0	50,8
3 150	66,4	55,7
4 000		–
5 000		–

Legende:
ΔL Trittschallminderung, in dB
/ Frequenz in Hz



DAMTEC® sonic ROOF CONSTRUCTION 25

Test report number T-181212-A

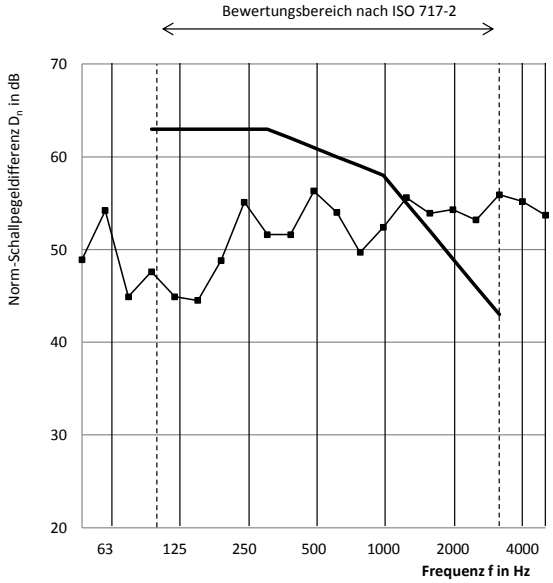
IMPACT SOUND LEVEL **$L'_{n,w}$ = 61 dB**

KRAITEC®

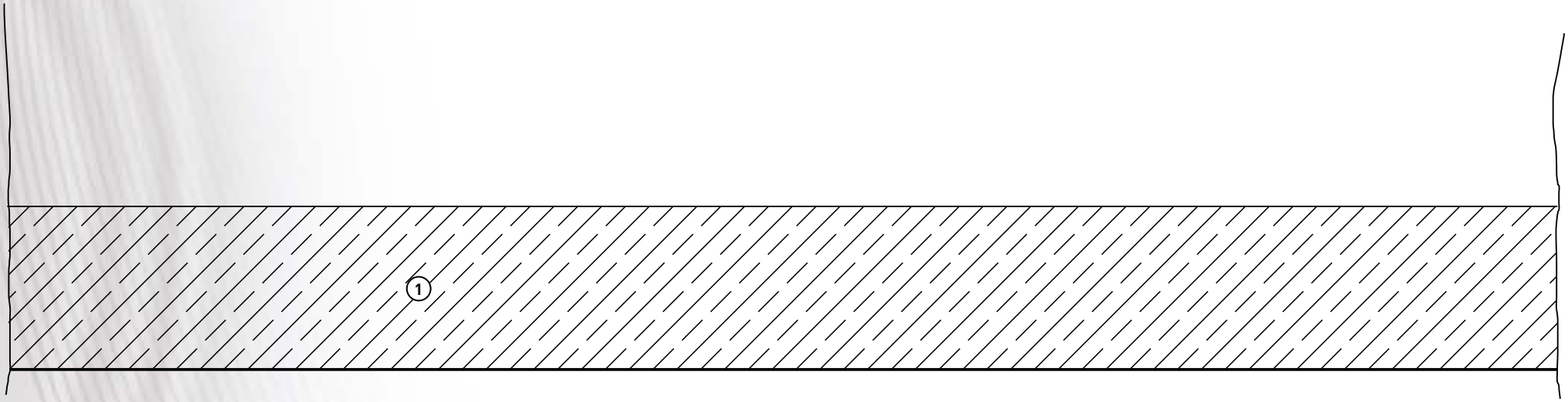
Scale 1:5

(1) Concrete ceiling, 140 mm

Frequenz f in Hz	L'_n in dB
50	48,9
63	54,2
80	44,9
100	47,6
125	44,9
160	44,5
200	48,8
250	55,1
315	51,6
400	51,6
500	56,3
630	54,0
800	49,7
1000	52,4
1250	55,6
1600	53,9
2000	54,3
2500	53,2
3150	55,9
4000	55,2
5000	53,7



Construction site measurement: Measured diagonally from the balcony into the living space



DAMTEC® sonic ROOF CONSTRUCTION 26

Test report number T-181212-B

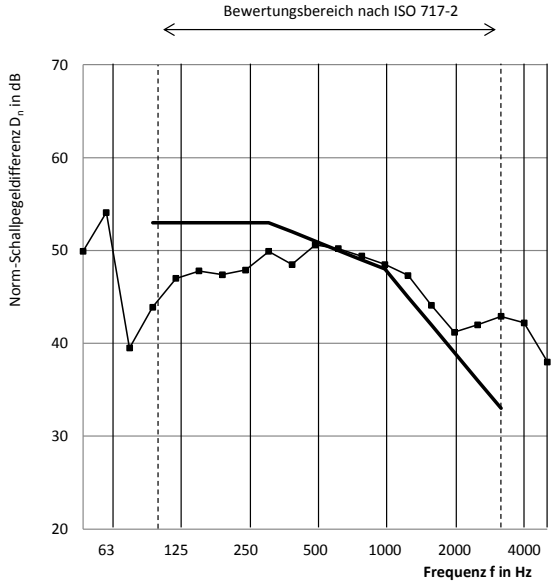
IMPACT SOUND LEVEL **$L'_{n,w}$ = 51 dB**

KRAITEC®

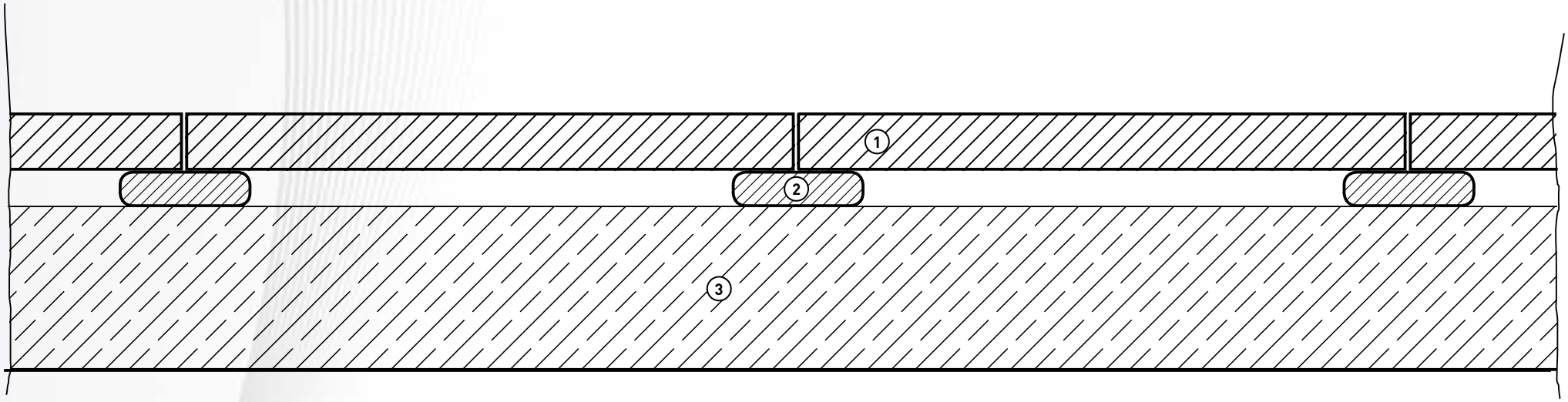
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 40 mm
2. Mortar sacks
3. Concrete ceiling, 140 mm

Frequenz f in Hz	L'_n in dB
50	49,9
63	54,1
80	39,5
100	43,9
125	47,0
160	47,8
200	47,4
250	47,9
315	49,9
400	48,5
500	50,6
630	50,2
800	49,4
1000	48,5
1250	47,3
1600	44,1
2000	41,2
2500	42,0
3150	42,9
4000	42,2
5000	38,0



Construction site measurement: Measured diagonally from the balcony into the living space



DAMTEC® sonic ROOF CONSTRUCTION 27

Test report number T-181212-C

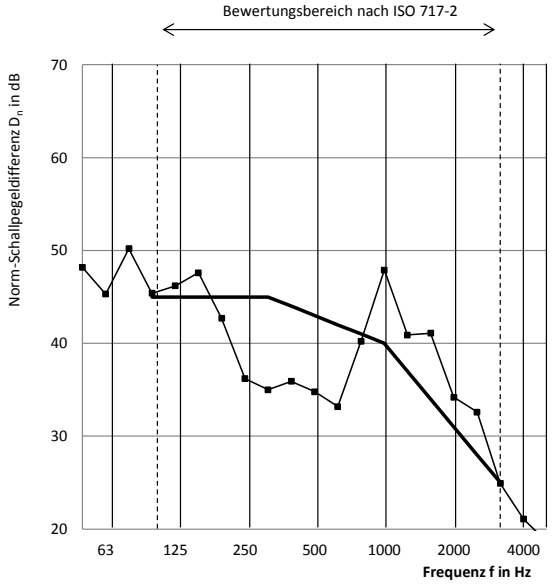
IMPACT SOUND LEVEL **$L'_{n,w}$ = 43 dB**

KRAITEC®

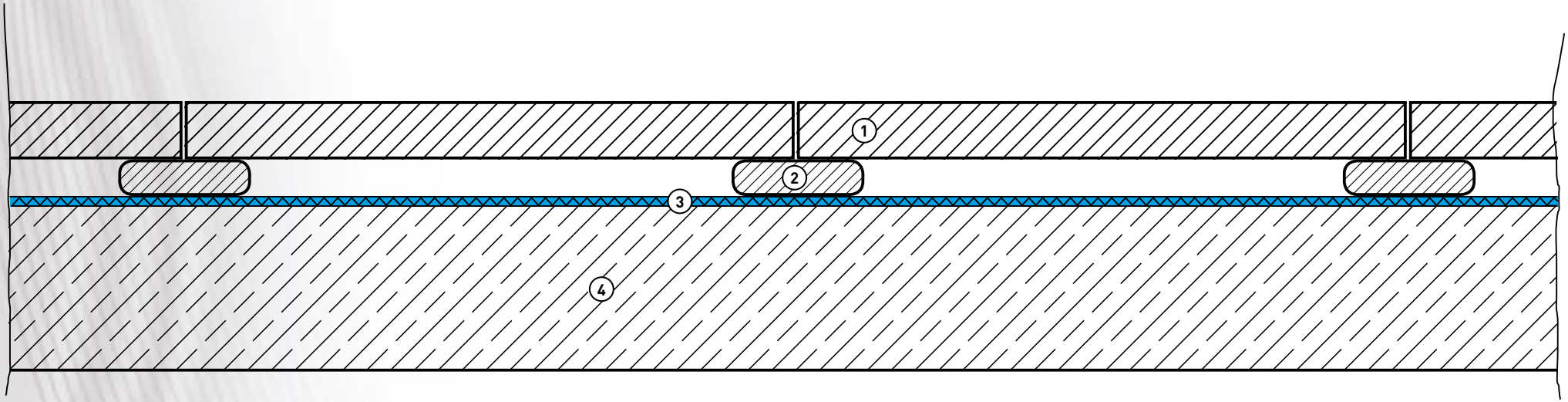
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 40 mm
2. Mortar sacks
3. **DAMTEC® sonic,** 8 mm
4. Concrete ceiling, 140 mm

Frequenz f in Hz	L'_n in dB
50	48,2
63	45,3
80	50,2
100	45,4
125	46,2
160	47,6
200	42,7
250	36,2
315	35,0
400	35,9
500	34,8
630	33,2
800	40,2
1000	47,9
1250	40,9
1600	41,1
2000	34,2
2500	32,6
3150	24,9
4000	21,1
5000	18,6



Construction site measurement: Measured diagonally from the balcony into the living space



DAMTEC® sonic ROOF CONSTRUCTION 28

Test report number T-181212-D

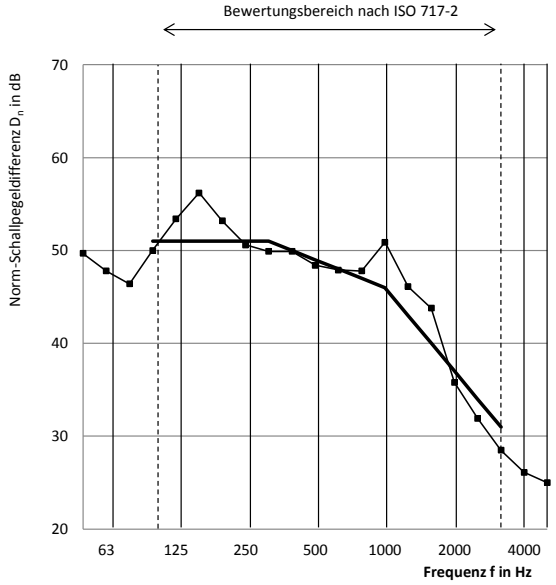
IMPACT SOUND LEVEL **$L'_{n,w}$ = 49 dB**

KRAITEC®

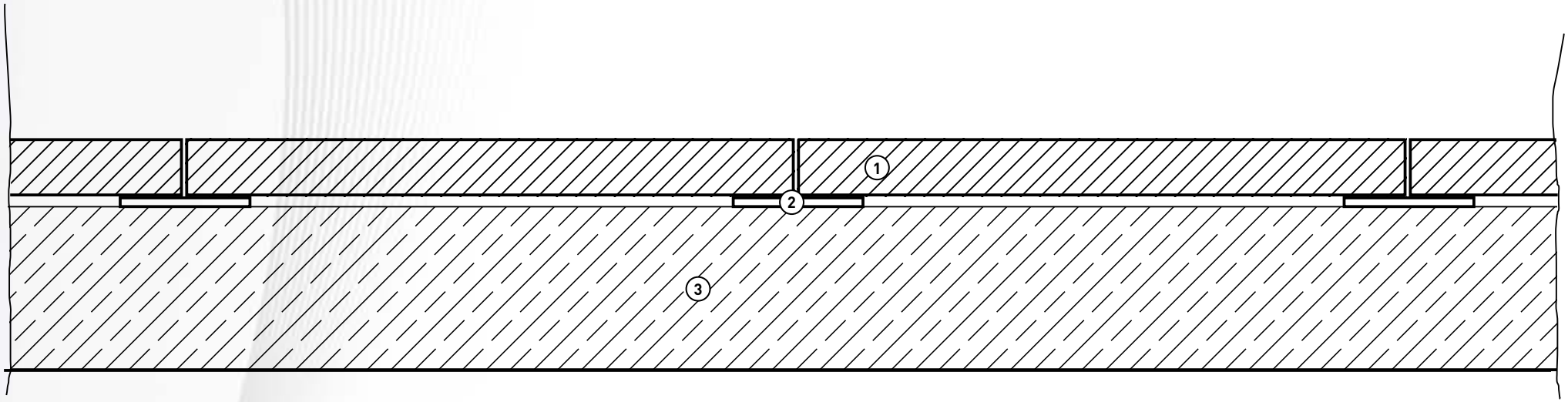
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 40 mm
2. Standard bearing 120 x 10 mm
3. Concrete ceiling, 140 mm

Frequenz f in Hz	L'_n in dB
50	49,7
63	47,8
80	46,4
100	50,0
125	53,4
160	56,2
200	53,2
250	50,6
315	49,9
400	49,9
500	48,4
630	47,9
800	47,8
1000	50,9
1250	46,1
1600	43,8
2000	35,8
2500	31,9
3150	28,5
4000	26,1
5000	25,0



Construction site measurement: Measured diagonally from the balcony into the living space



DAMTEC® sonic ROOF CONSTRUCTION 29

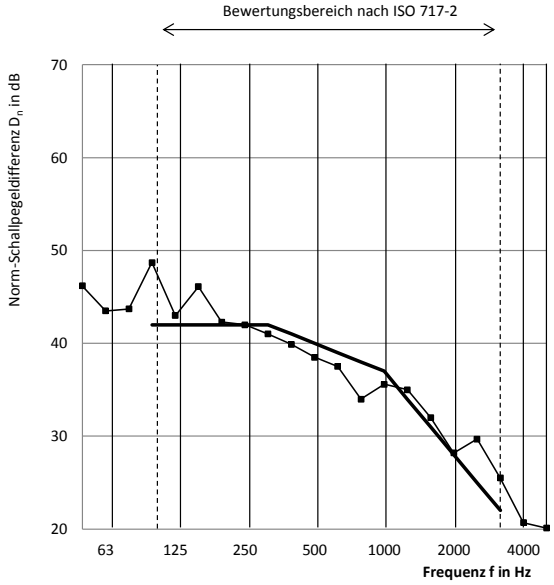
Test report number T-181212-E

IMPACT SOUND LEVEL **$L'_{n,w}$ = 40 dB**

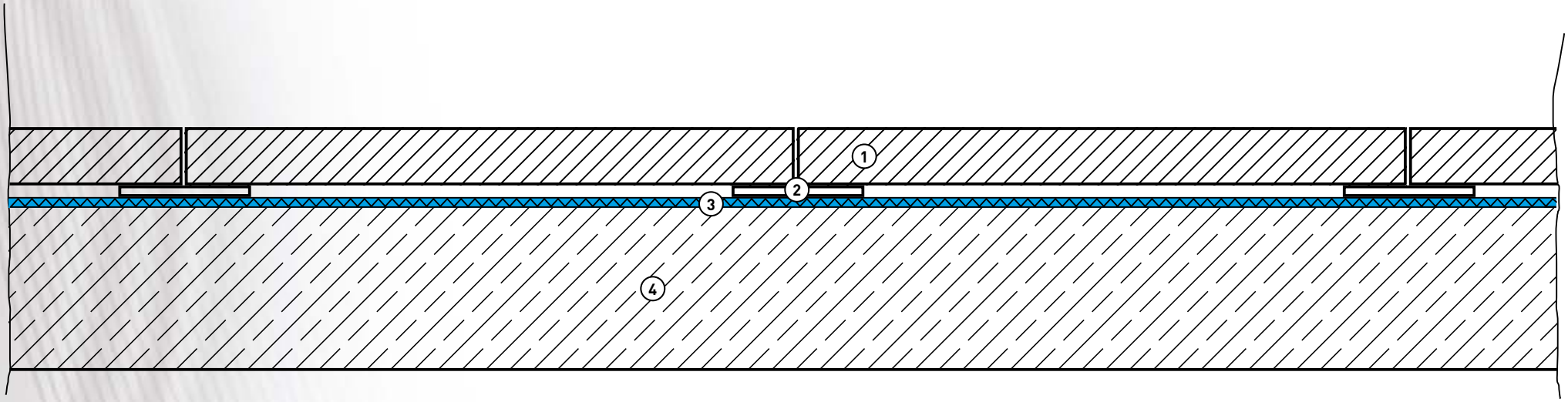
KRAITEC®
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 40 mm
2. Standard bearing 120 x 10 mm
3. **DAMTEC® sonic,** 8 mm
4. Concrete ceiling, 140 mm

Frequenz f in Hz	L'_n in dB
50	46,2
63	43,5
80	43,7
100	48,7
125	43,0
160	46,1
200	42,3
250	42,0
315	41,0
400	39,9
500	38,5
630	37,5
800	34,0
1000	35,6
1250	35,0
1600	32,0
2000	28,2
2500	29,7
3150	25,5
4000	20,7
5000	20,1



Construction site measurement: Measured diagonally from the balcony into the living space



Personal Notes

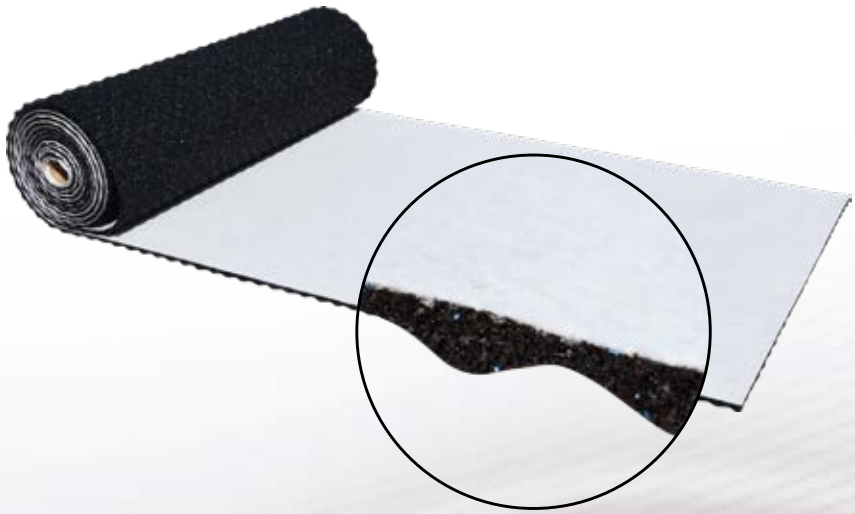
DAMTEC® sonic drain plus

FLEECE-LAMINATED STRUCTURAL PROTECTION MAT FOR SOUND INSULATION

DAMTEC® sonic drain plus is a special fleece-laminated drainage protection mat in accordance with DIN 18531-2 [2017-07] for impact sound insulation on roof terraces, balconies, loggias and pergolas.
DAMTEC® sonic drain plus is installed for example in classic constructions with concrete slabs on a gravel bed and thermal insulation by means of PIR, EPS or XPS (warm and inverted roof).

For detailed information on drainage properties, see p. 50

Technical data	
Material	Recycled rubber granules bonded with PU elastomer
Volume weight	ca. 700 – 800 kg/m³
Material thickness	15/6 mm (± 1.0 mm)
Width of sheets	1,200 mm (± 1.5 % mm)
Length	8.0 m (± 1.5 %)
Color	Black with blue color particles
Surface	Fleece lamination
Bottom side	Granule structure, with profile
Tensile strength	ca. 0.3 N/mm² (DIN EN ISO 1798)
Elongation at break	ca. 30 % (DIN EN ISO 1798)
Fire behavior	E_{fl} (DIN EN 13501-1)
Temperature resistance	– 30 to 80 °C
Traffic load	ca. 0.95 t/m² at 10 % compression ca. 1.88 t/m² at 15 % compression ca. 3.18 t/m² at 20 % compression based on DIN EN 826



DAMTEC® sonic drain plus ROOF CONSTRUCTION 01

Test report number 450396-17

IMPACT SOUND IMPROVEMENT **ΔLw = 39 dB**

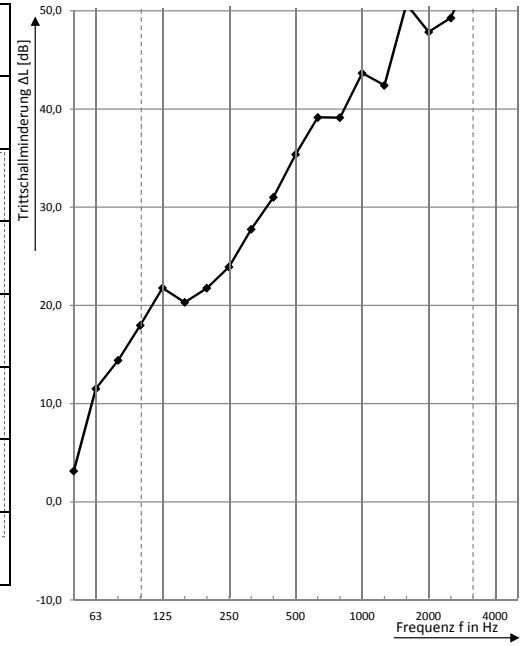
KRAITEC®

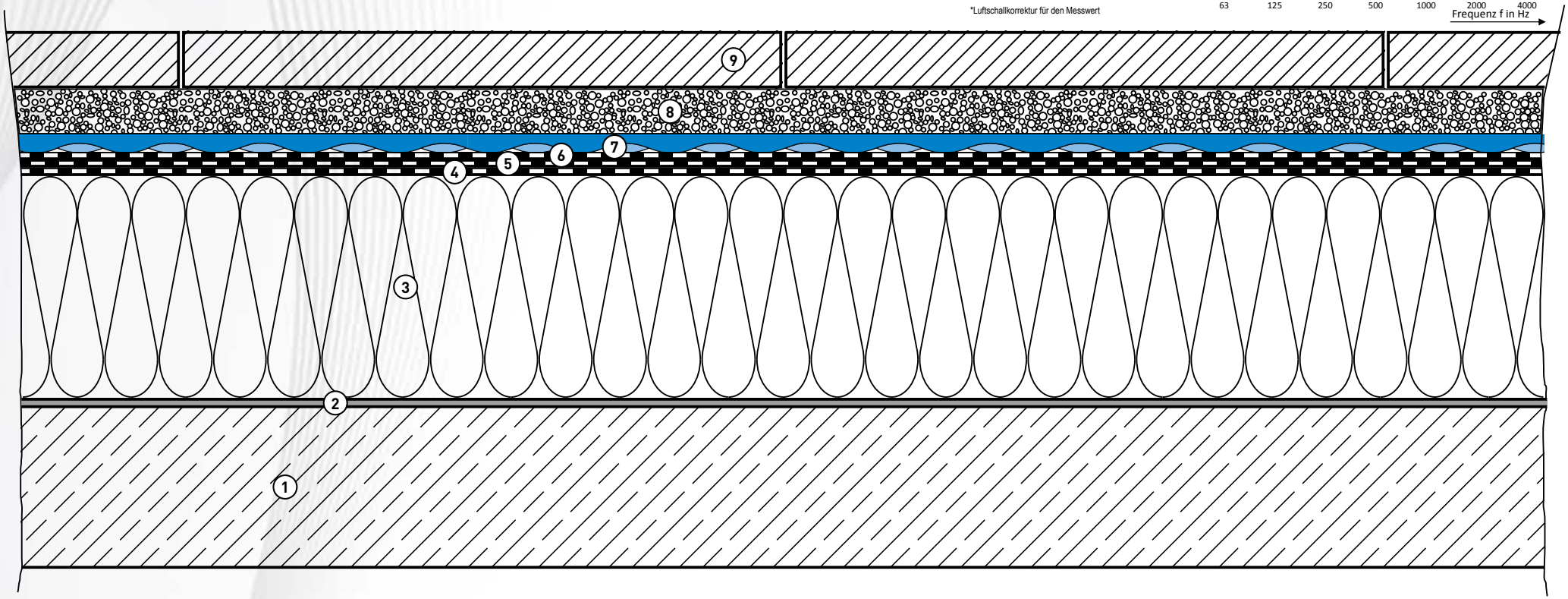
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 4 cm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. Upper layer PYE PV 200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Laminate layer G 200 DD, sand
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	3,1
63	62,7	11,5
80	57,4	14,4
100	57,2	18,0
125	67,5	21,8
160	62,6	20,3
200	64,1	21,8
250	67,1	23,9
315	65,3	27,7
400	64,7	31,0
500	65	35,4
630	65,3	39,1
800	66,4	39,1
1000	67,8	43,7
1250	67,7	42,4
1600	68,2	50,7
2000	68,8	47,9
2500	68,6	49,3
3150	67,9	54,4
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus ROOF CONSTRUCTION 02

Test report number 450396-16

IMPACT SOUND IMPROVEMENT **ΔLw = 36 dB**

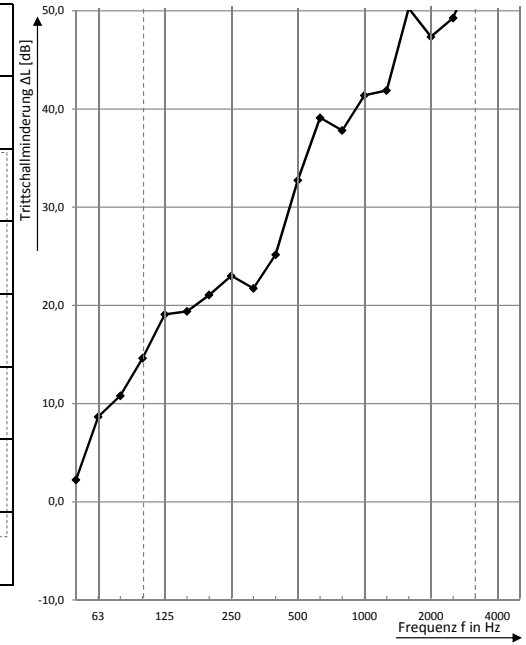
KRAITEC®

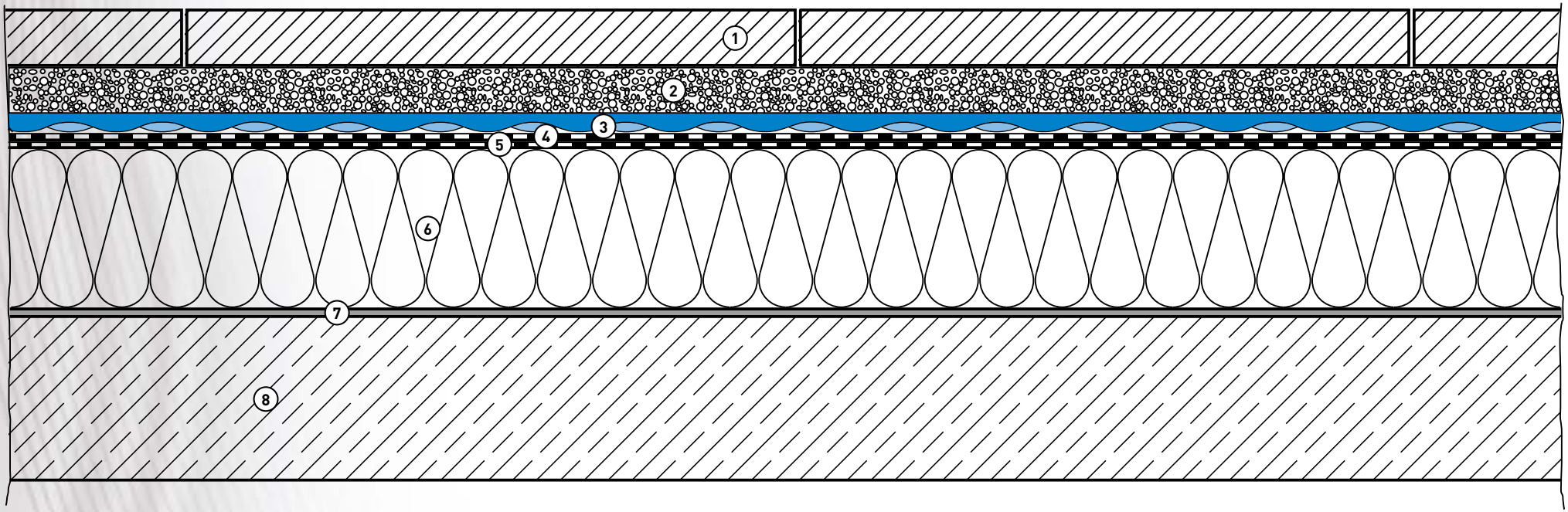
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 40 mm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. Upper layer PYE PV 200 S 5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Insulation PIR FA WLS 024, 140 mm
7. Bitumen vapor barrier V60 S4 +AL
8. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	2,2
63	62,7	8,7
80	57,4	10,8
100	57,2	14,6
125	67,5	19,1
160	62,6	19,4
200	64,1	21,1
250	67,1	23,0
315	65,3	21,7
400	64,7	25,2
500	65	32,8
630	65,3	39,1
800	66,4	37,8
1000	67,8	41,4
1250	67,7	41,9
1600	68,2	50,3
2000	68,8	47,4
2500	68,6	49,3
3150	67,9	54,5
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus ROOF CONSTRUCTION 03

Test report number 450396-13

IMPACT SOUND IMPROVEMENT **ΔLw = 31 dB**

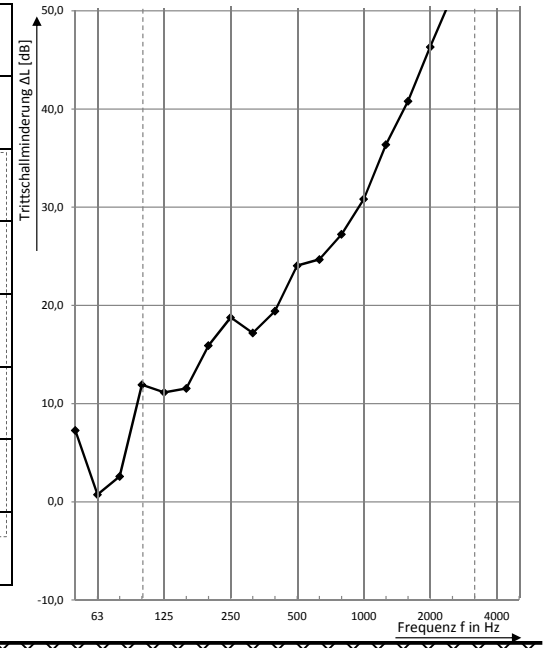
KRAITEC®

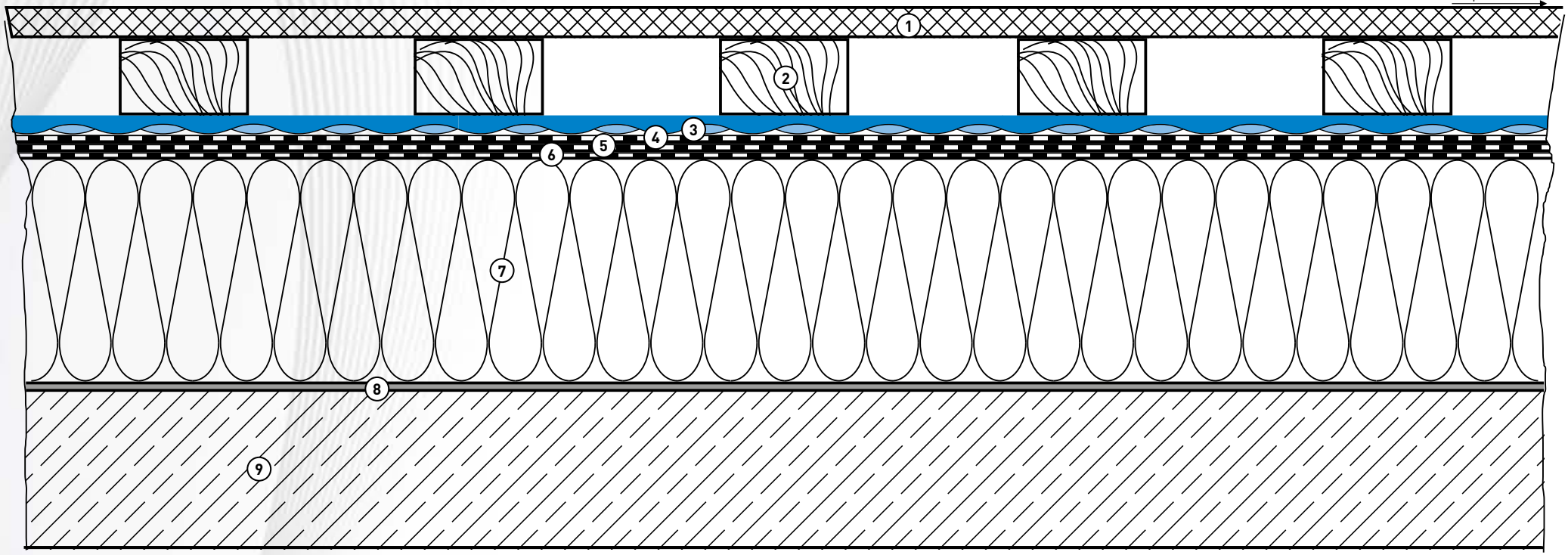
Scale 1:5

1. Wood planking, larch, 27 mm
2. Support laths 45 x 70 mm, center distance 600 mm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Laminate layer G 200 DD, sand
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	7,3
63	62,7	0,7
80	57,4	2,6
100	57,2	11,9
125	67,5	11,1
160	62,6	11,5
200	64,1	15,9
250	67,1	18,8
315	65,3	17,2
400	64,7	19,4
500	65	24,1
630	65,3	24,7
800	66,4	27,2
1000	67,8	30,8
1250	67,7	36,4
1600	68,2	40,8
2000	68,8	46,3
2500	68,6	51,6
3150	67,9	55,0
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus ROOF CONSTRUCTION 04

Test report number 450396-03

IMPACT SOUND IMPROVEMENT **ΔLw = 32 dB**

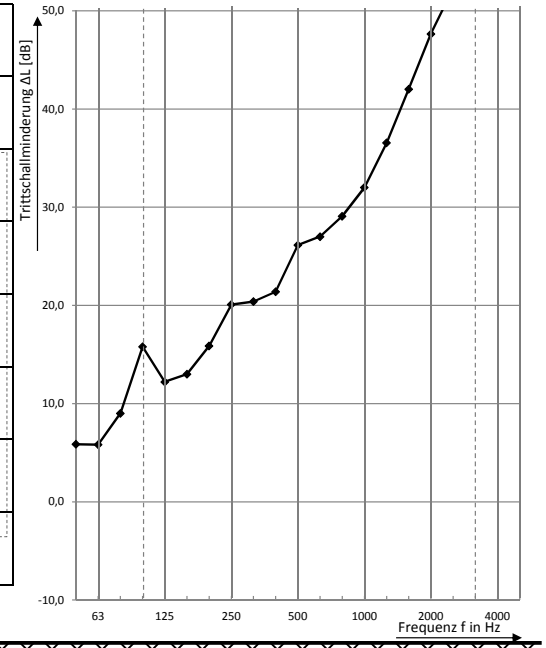
KRAITEC®

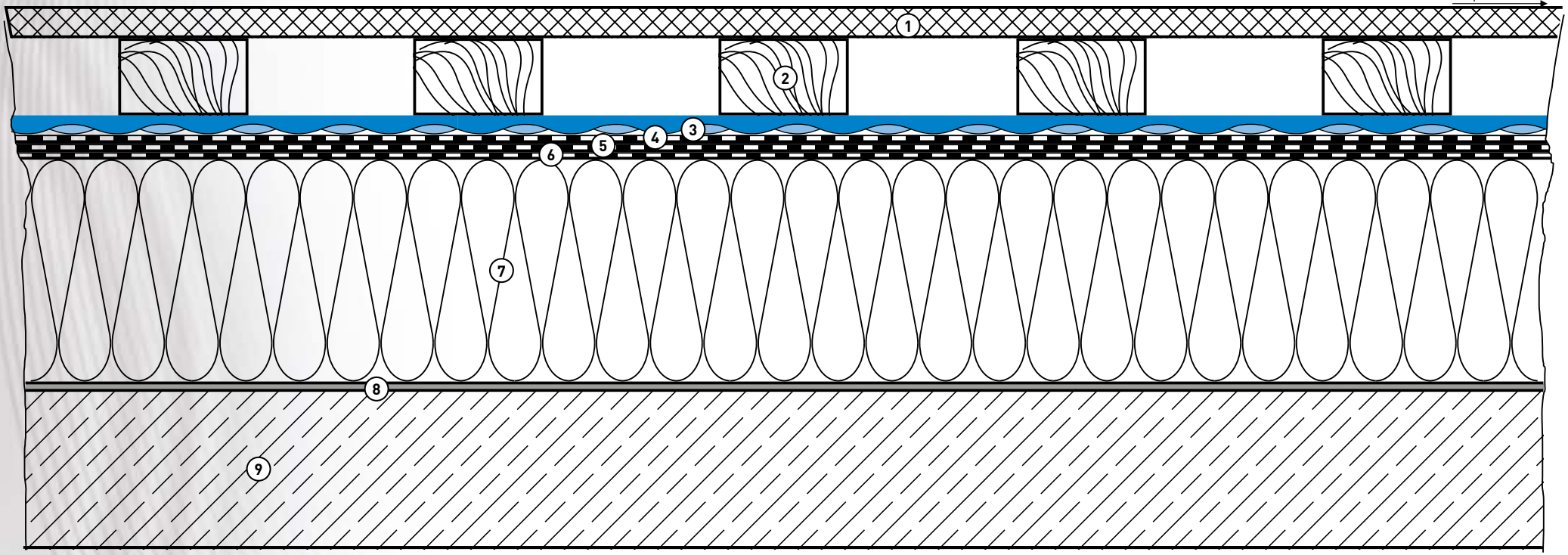
Scale 1:5

1. Wood planking, larch, 27 mm
2. Support laths 45 x 70 mm, center distance 600 mm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	5,9
63	62,7	5,8
80	57,4	9,0
100	57,2	15,8
125	67,5	12,2
160	62,6	13,0
200	64,1	15,9
250	67,1	20,1
315	65,3	20,4
400	64,7	21,4
500	65	26,1
630	65,3	27,0
800	66,4	29,1
1000	67,8	32,0
1250	67,7	36,6
1600	68,2	42,0
2000	68,8	47,7
2500	68,6	52,3
3150	67,9	55,2
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus ROOF CONSTRUCTION 05

Test report number 450396-05

IMPACT SOUND IMPROVEMENT **ΔLw = 42 dB**

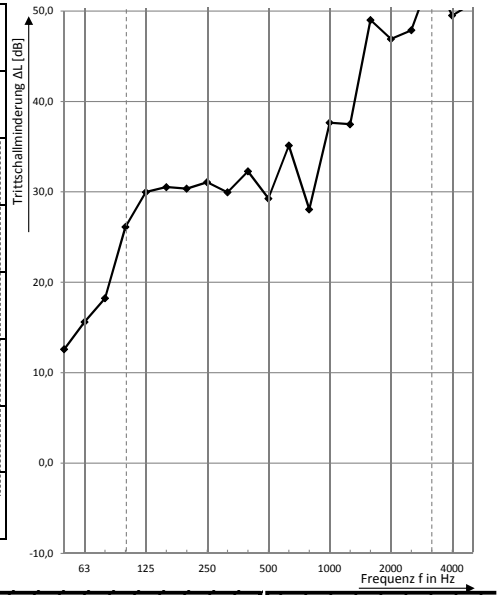
KRAITEC®

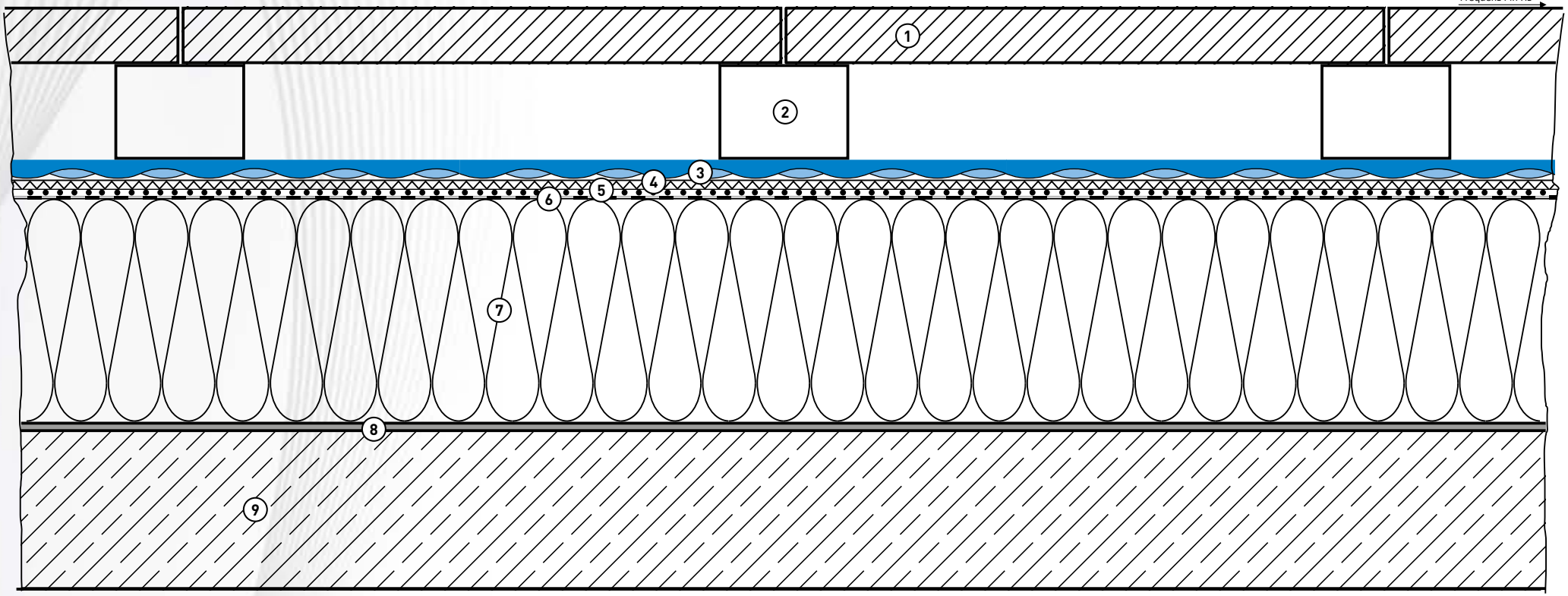
Scale 1:5

1. Concrete sidewalk slabs, smooth 500 x 500 x 50 mm
2. PA stilt bearing, adjustable
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	12,6
63	62,7	15,6
80	57,4	18,2
100	57,2	26,1
125	67,5	30,0
160	62,6	30,5
200	64,1	30,4
250	67,1	31,1
315	65,3	29,9
400	64,7	32,3
500	65	29,3
630	65,3	35,1
800	66,4	28,1
1000	67,8	37,7
1250	67,7	37,5
1600	68,2	49,0
2000	68,8	46,9
2500	68,6	47,9
3150	67,9	54,0
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus ROOF CONSTRUCTION 06

Test report number 450396-15

IMPACT SOUND IMPROVEMENT **ΔLw = 41 dB**

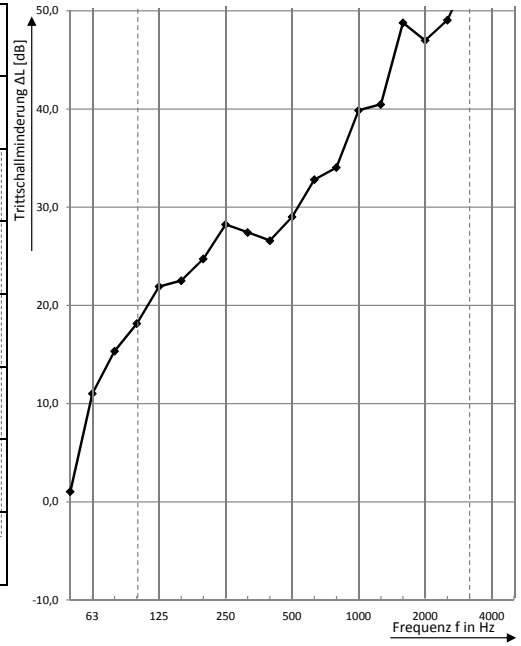
KRAITEC®

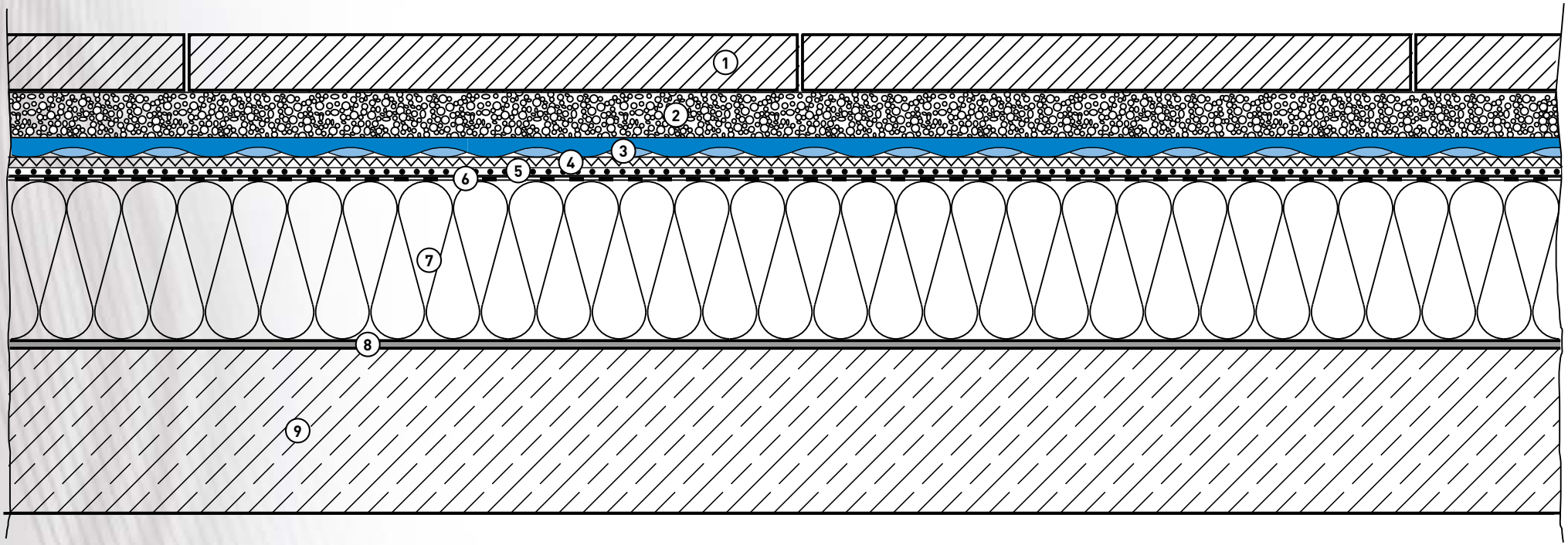
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 4 cm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation PIR FA WLS 024, 140 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	1,0
63	62,7	11,0
80	57,4	15,4
100	57,2	18,2
125	67,5	21,9
160	62,6	22,5
200	64,1	24,7
250	67,1	28,2
315	65,3	27,4
400	64,7	26,6
500	65	29,0
630	65,3	32,8
800	66,4	34,1
1000	67,8	39,9
1250	67,7	40,5
1600	68,2	48,8
2000	68,8	47,0
2500	68,6	49,1
3150	67,9	53,9
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus ROOF CONSTRUCTION 07

Test report number 450396-14

IMPACT SOUND IMPROVEMENT **ΔLw = 41 dB**

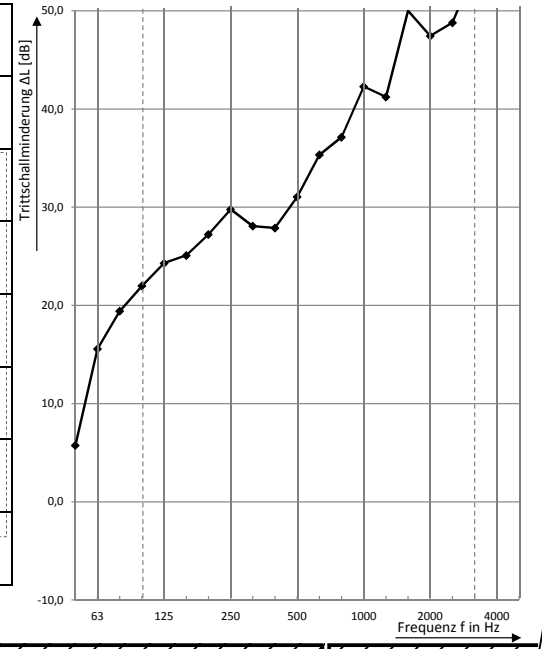
KRAITEC®

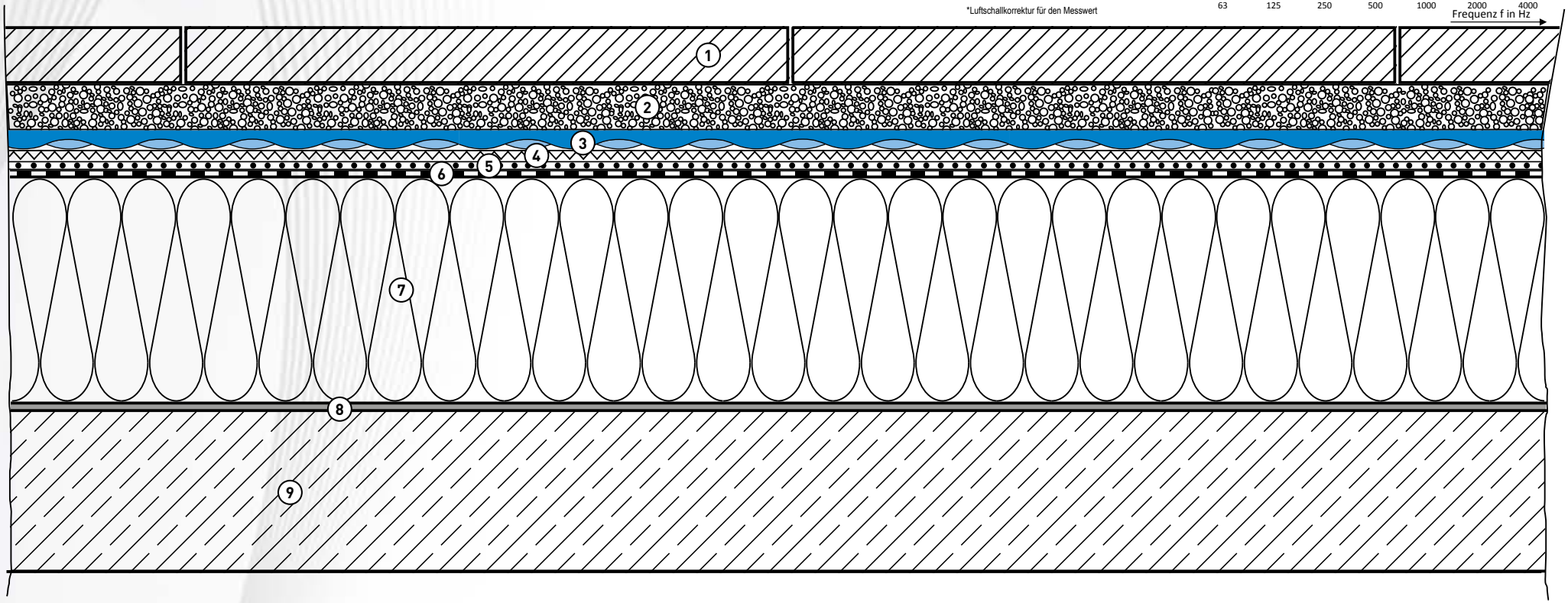
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 4 cm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. Separating layer polyester fleece, 300 g/m²
5. PVC roofing felt 1.5 mm
6. Rough glass fleece 120 g/m²
7. Insulation EPS 035/200 KPA DAA DH, 200 mm
8. Bitumen vapor barrier V60 S4 +AL
9. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	5,8
63	62,7	15,6
80	57,4	19,4
100	57,2	22,0
125	67,5	24,3
160	62,6	25,1
200	64,1	27,2
250	67,1	29,8
315	65,3	28,1
400	64,7	27,9
500	65	31,0
630	65,3	35,3
800	66,4	37,1
1000	67,8	42,3
1250	67,7	41,2
1600	68,2	50,0
2000	68,8	47,4
2500	68,6	48,8
3150	67,9	54,1
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus ROOF CONSTRUCTION 08

Test report number 450396-04

IMPACT SOUND IMPROVEMENT **ΔLw = 32 dB**

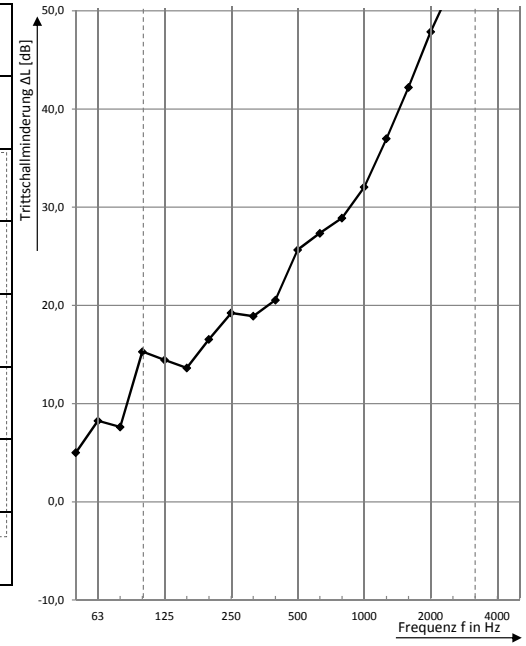
KRAITEC®

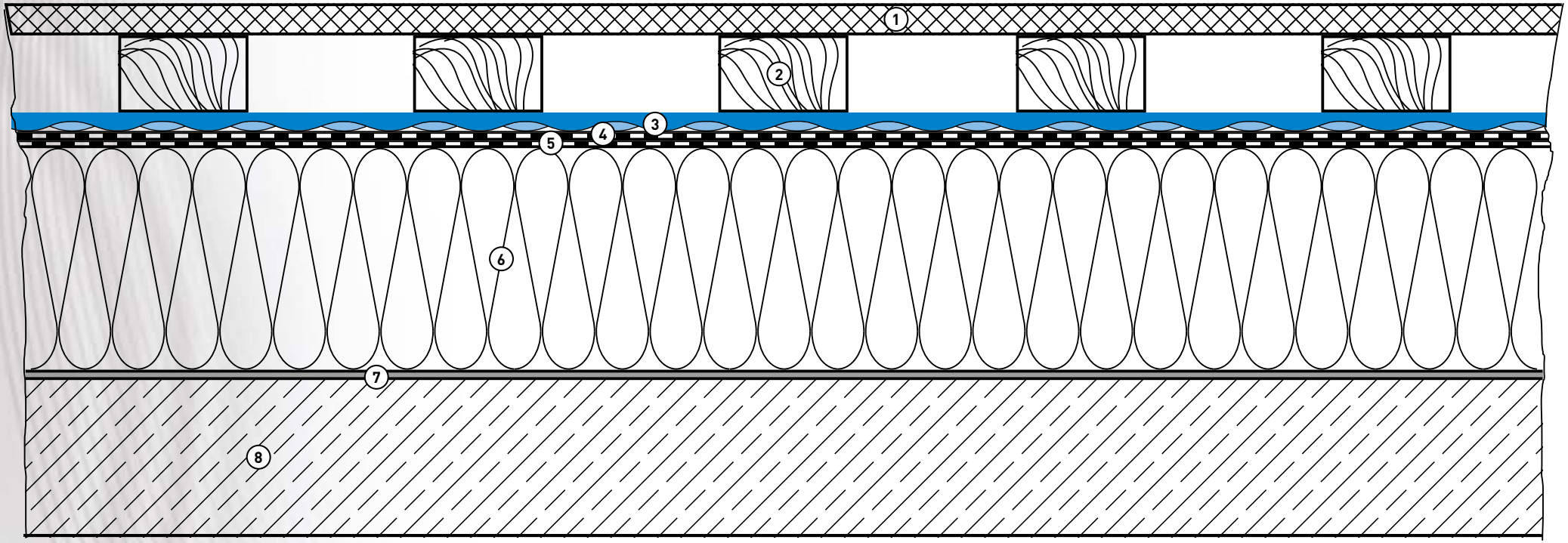
Scale 1:5

1. Wood planking, larch, 27 mm
2. Support laths 45 x 70 mm, center distance 600 mm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. FPO roofing felt 1.5 mm
5. Rough glass fleece 120 g/m²
6. Insulation EPS 035/200 KPA DAA DH, 200 mm
7. Bitumen vapor barrier V60 S4 +AL
8. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	5,0
63	62,7	8,2
80	57,4	7,6
100	57,2	15,3
125	67,5	14,4
160	62,6	13,6
200	64,1	16,5
250	67,1	19,2
315	65,3	18,9
400	64,7	20,5
500	65	25,7
630	65,3	27,4
800	66,4	28,9
1000	67,8	32,0
1250	67,7	37,0
1600	68,2	42,2
2000	68,8	47,9
2500	68,6	52,8
3150	67,9	55,5
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus

DAMTEC® sonic drain plus ROOF CONSTRUCTION 09

Test report number 450396-09

IMPACT SOUND IMPROVEMENT **ΔLw = 37 dB**

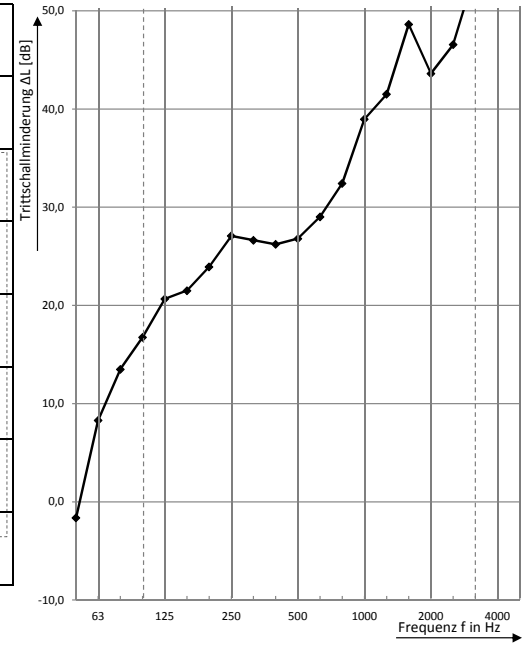
KRAITEC®

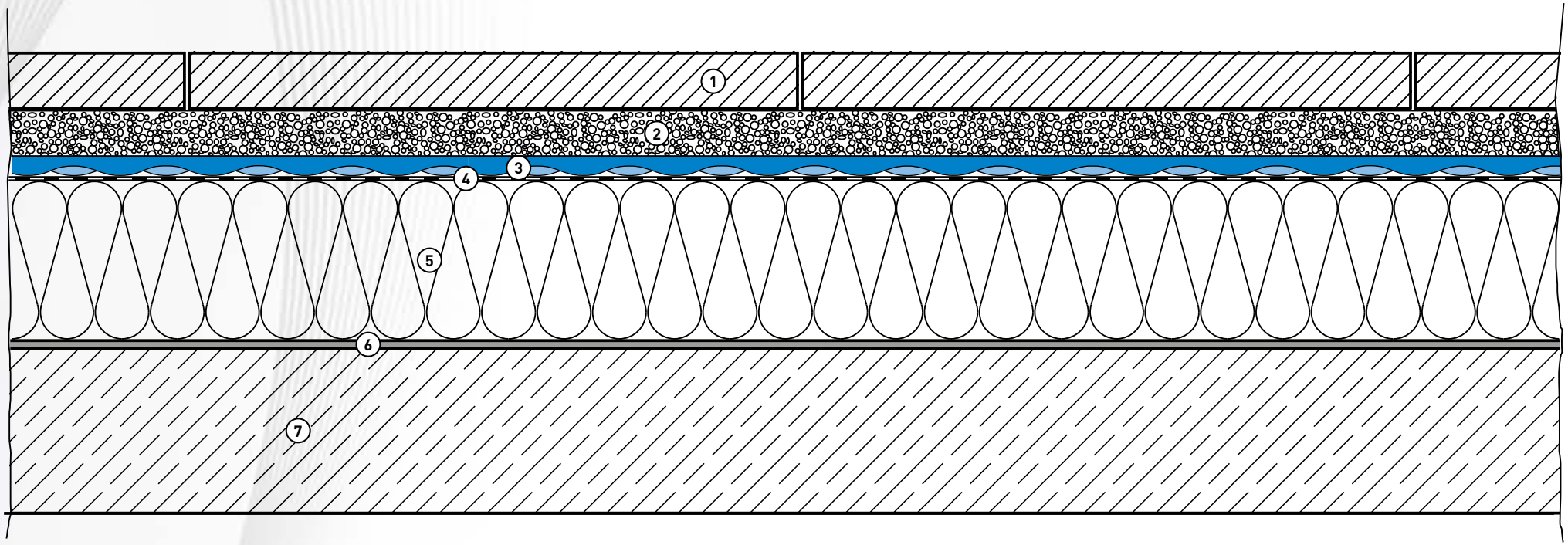
Scale 1:5

1. Concrete sidewalk slabs, 500 x 500 x 50 mm
2. Gravel bed 2/8, d = 4 cm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. FPO roofing felt 1.5 mm
5. Insulation PIR FA WLS 024, 140 mm
6. Bitumen vapor barrier V60 S4 +AL
7. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	-1,6
63	62,7	8,3
80	57,4	13,5
100	57,2	16,7
125	67,5	20,7
160	62,6	21,5
200	64,1	23,9
250	67,1	27,1
315	65,3	26,6
400	64,7	26,2
500	65	26,8
630	65,3	29,0
800	66,4	32,4
1000	67,8	39,0
1250	67,7	41,5
1600	68,2	48,6
2000	68,8	43,6
2500	68,6	
3150	67,9	
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





DAMTEC® sonic drain plus ROOF CONSTRUCTION 10

Test report number 450396-19

IMPACT SOUND IMPROVEMENT **ΔLw = 27 dB**

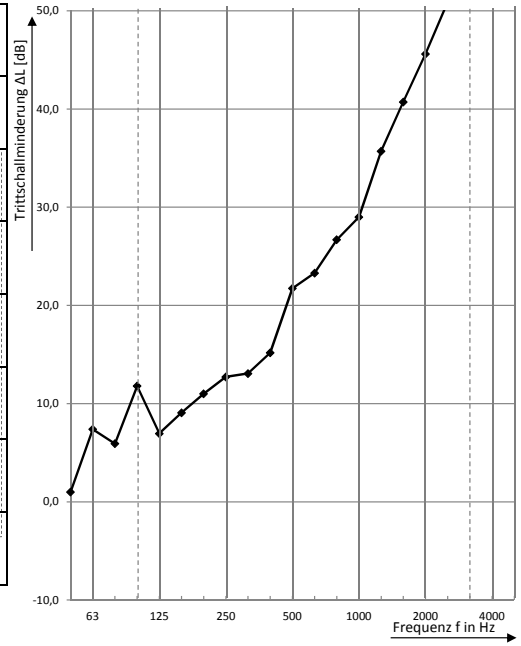
KRAITEC®

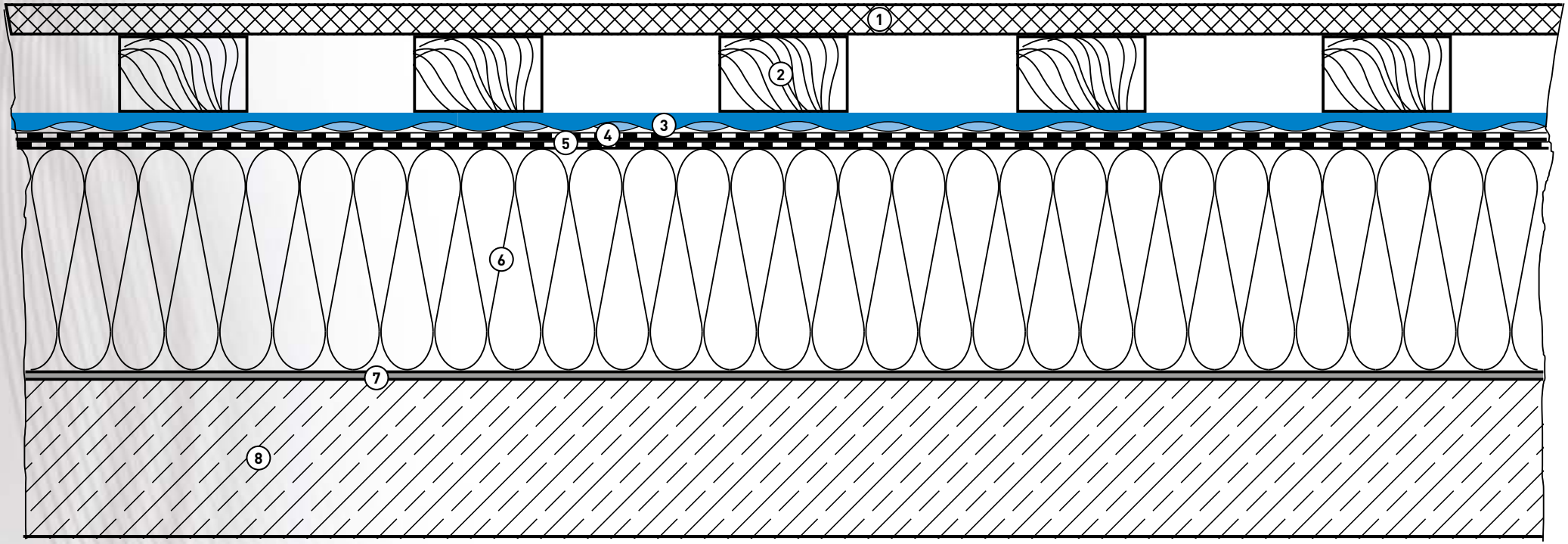
Scale 1:5

1. Wood planking, larch, 27 mm
2. Support laths 45 x 70 mm, center distance 600 mm
3. **DAMTEC® sonic drain plus,** 15/6 mm
4. Upper layer PYE PV200 S5, slate
5. 1st Waterproofing layer G200 S4, powder
6. Foamglas wall board W+F
7. Bitumen vapor barrier V60 S4 +AL
8. Concrete ceiling, 140 mm

Frequenz f [Hz]	$L_{n,0}$ Terzband [dB]	ΔL Terzband [dB]
50	56,5	1,0
63	62,7	7,4
80	57,4	5,9
100	57,2	11,8
125	67,5	7,0
160	62,6	9,1
200	64,1	11,0
250	67,1	12,7
315	65,3	13,1
400	64,7	15,2
500	65	21,7
630	65,3	23,3
800	66,4	26,7
1000	67,8	29,0
1250	67,7	35,7
1600	68,2	40,7
2000	68,8	45,6
2500	68,6	50,9
3150	67,9	54,4
4000	66,9	
5000	64,4	

*Luftschallkorrektur für den Messwert





Anwendungsbeispiele: Trittschalldämmung im Außenbereich mit DAMTEC® sonic / sonic drain plus

Water drainage capacity in the plane

DAMTEC® sonic drain plus is used in outdoor areas, for example under sidewalk slabs and gravel beds. Here it is necessary for larger water quantities to be drained off on the waterproofing material. Standing water must be prevented by a sufficient inclination in the supporting construction. Standing water could result in less effective improvement of the impact sound improvement. The material properties of **DAMTEC® sonic drain plus** ensure drainage of large quantities of water on a horizontal plane, even under load.

Test direction: MD hard/hard	Hydraulic gradient i = 0.010	Hydraulic gradient i = 0.020
2 kPa	0.143 l/(m·s)	0.228 l/(m·s)
15 kPa	0.078 l/(m·s)	0.129 l/(m·s)
50 kPa	0.008 l/(m·s)	0.018 l/(m·s)

(according to DIN EN ISO 12958* 08.2010)
The table shows that with an applied load of about 200 kg/m² and an inclination of 2 %, 0.228 liters of water are drained per second for each running meter width of **DAMTEC® sonic drain plus.**

Water permeability

Due to the specially developed material structure of **DAMTEC® sonic drain plus** it is highly water permeable. This ensures good vertical drainage of water by **DAMTEC® sonic drain plus** under load.

	Water permeability coefficient k_v, const. at 20 °C	Permittivity at 20 °C
2 kPa	0.0049 m/s	0.29 1/s
20 kPa	0.0036 m/s	0.25 1/s
200 kPa	0.0010 m/s	0.11 1/s

(according to DIN 60500-4)
The table shows that with a load of about 200 kg/m² and a constant water level of 15 mm on the mat, about 4.9 liters of water per m² are drained per second vertically through the **DAMTEC® sonic drain plus.**

Personal Notes

Report from Baulinks.de

Impact sound improvement on thermally insulated concrete ceilings in outdoor areas

(10/12/2013) The requirements for increased impact sound insulation in construction have continuously increased in recent years. This applies to private homes, rental property, office buildings, public buildings and religious structure – including structural modifications to existing buildings. In Germany, these requirements are described in the DIN 4109 standard. According to this standard, the required minimum impact sound insulation value for residential buildings is ≤ 53 dB and for increased sound impact insulation it is ≤ 46 dB according to companion sheet 2. The requirement for increased impact sound insulation is already standard practice in general residential construction, is considered as generally valid in the administration of justice and reflects the generally recognized codes of practice. Improved construction materials and the knowledge of acoustic relationships have led to a fast rise in the materials developed especially developed for this purpose. The fact that this field will continue to grow and that there is still much that is possible is due primarily to the more stringent laws requiring improved sound insulation. Parallels to the increasing requirements for thermal insulation and increased energy savings in recent years are unmistakable. Sound/impact sound measures must be planned and implemented for building components that have ceilings that can be walked on and that adjoin other building components. This also includes ceilings in outdoor areas, such as terraces, loggias, balconies or arbors. On insulated ceilings, generally balconies and loggias, the required measures are relatively easy to implement, since sound-absorbing materials such as thermal insulation, foils or separating layers are already installed. In this respect the requirement for increased sound impact insulation with additionally installed sound-absorbing mats, such as **DAMTEC® sonic** from KRAIBURG Relastec, for example, would be relatively easy to comply with – if planned and installed in accordance with the manufacturer's specifications – see report "2 in 1: Structural protection and impact sound insulation for roof terraces and loggias" of 2/16/2012. Uninsulated terraces and arbors represent a special case.

Although they are often thermally insulated from the building shell, they are not sound insulated – this applies both to new and renovated buildings. What is perhaps good for thermal behavior can – to exaggerate – become a catastrophe in terms of acoustic engineering.

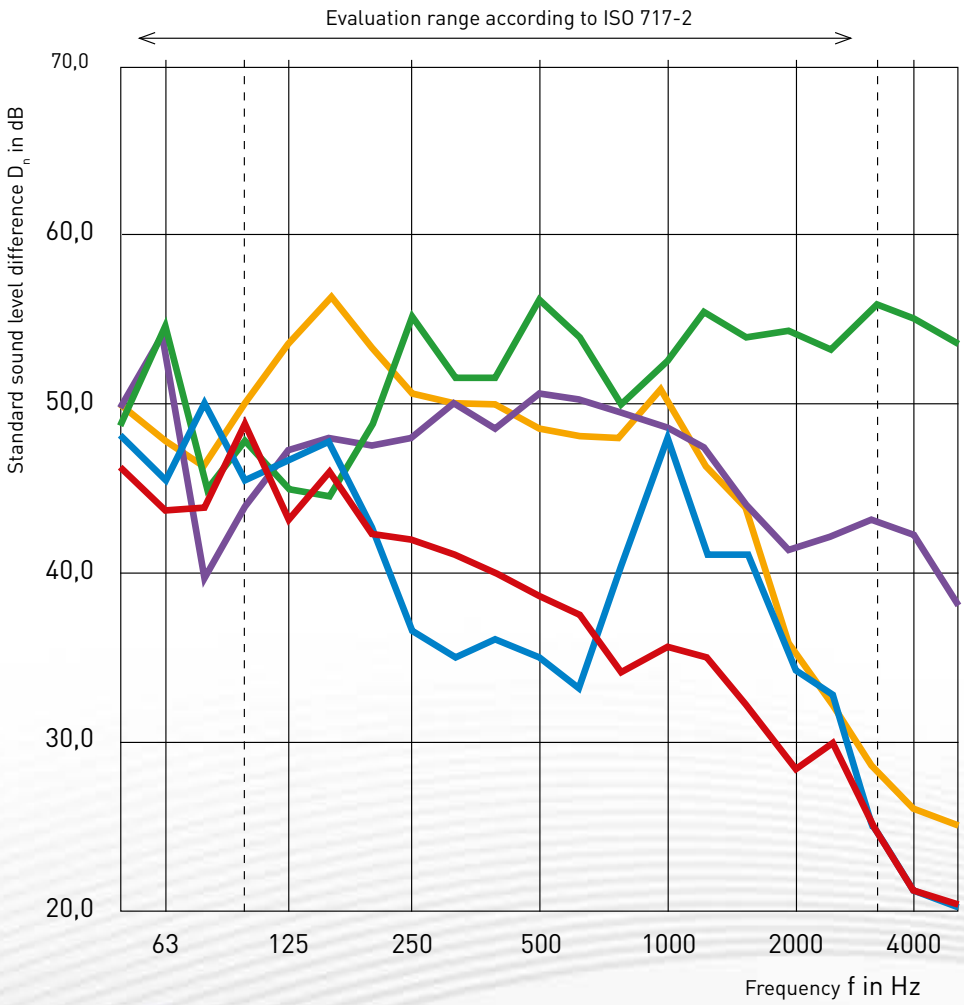
In view of this, KRAIBURG Relastec, in cooperation with Dr.-Ing. Alexander Siebel of the engineering firm SWA, conducted impact sound measurements in a pilot building in Düsseldorf which represented exactly the situation described above. The goal of the examination was to determine the impact sound insulation in relation to the structural sound insulation. In addition to the existing situation, different coverings were examined with the goal of achieving a safe construction with respect to the minimum impact sound insulation according to DIN 4109 and the increased impact sound protection according to DIN 4109, companion sheet 2.

The floor of the arbors, which is not insulated, was tested under the following conditions (substructure/supporting structure/reinforced concrete):

1. Construction without additional structure – i.e. without paving slab **(green)**
2. 40 mm paving slab on mortar sacks **(violet)**
3. 40 mm paving slab on mortar sacks on impact sound insulation sheet **DAMTEC® sonic** 8 mm **(blue)**
4. 40 mm paving slab on slab bearing 120 x 100 mm **(orange)**
5. 40 mm paving slab on slab bearing 120 x 100 mm on impact sound insulation sheet **DAMTEC® sonic** 8 mm **(red)**

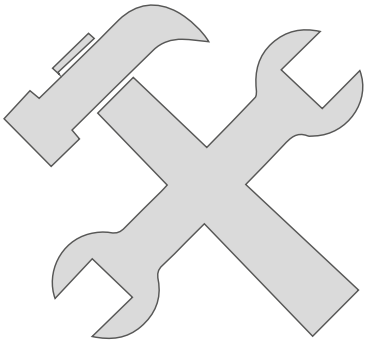
Conclusions: The results of the impact sound measurements show that arbors – as in this case – or similar structural situations are to be evaluated critically. Without additional impact sound attenuation measures it is not even possible to comply with the minimum level of ≤ 53 dB according to DIN 4109, not to mention the increased sound insulation in DIN 4109, companion sheet 2. With the **DAMTEC® sonic** sound insulation mat, on the other hand, an impact sound improvement of up to 21 dB is possible, depending on the construction used.

The following lab measurements under similar conditions confirmed the construction site measurements. In this connection, other typical paving types/structures were simulated in the lab and measured on insulated and uninsulated terraces, loggias and balconies. Here again the results are clear: **Without impact sound insulation mats, it is not possible to achieve increased impact sound insulation.**



$L'_{n,w1}$ =	61 dB	C_{I1} =	-11 dB	$C_{I,50\text{-}2500}$ =	-11 dB
$L'_{n,w2}$ =	51 dB		-6 dB		-5 dB
$L'_{n,w3}$ =	43 dB		-4 dB		-1 dB
$L'_{n,w4}$ =	49 dB		-2 dB		-1 dB
$L'_{n,w5}$ =	40 dB		-2 dB		0 dB

- We recycle the rubber compounds to manufacture a new raw material and new products and therefore make a valuable contribution to protecting the environment.
- We invest consistently in environmentally friendly production.
- Our products are continuously monitored and developed for the purpose of environmental protection and we are constantly seeking eco-friendly alternatives to further reduce emissions and save resources.
- All employees of KRAIBURG Relastec are committed to work practices with a low environmental impact.
- Our suppliers are also monitored constantly.



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DAMTEC® sonic

DAMTEC® sonic drain plus

KRAITEC® Structural Protection

KRAITEC® step

KRAITEC® Reference Projects

KRAITEC®
PROTECTING VALUES

PROTECTIVE MATS FOR STRUCTURAL PROTECTION
made from recycled rubber

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