


PERMISSIBLE EMBEDMENT DEPTH OF CABLE PROTECTION PIPES


EVOcab HARD



Compression strength class: 450
Impact resistance: N

Material: polyethylene (HDPE)

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Installation places - according to EN 124-1





- A15

Areas which can only be used by pedestrians and pedal cyclists.
- B125

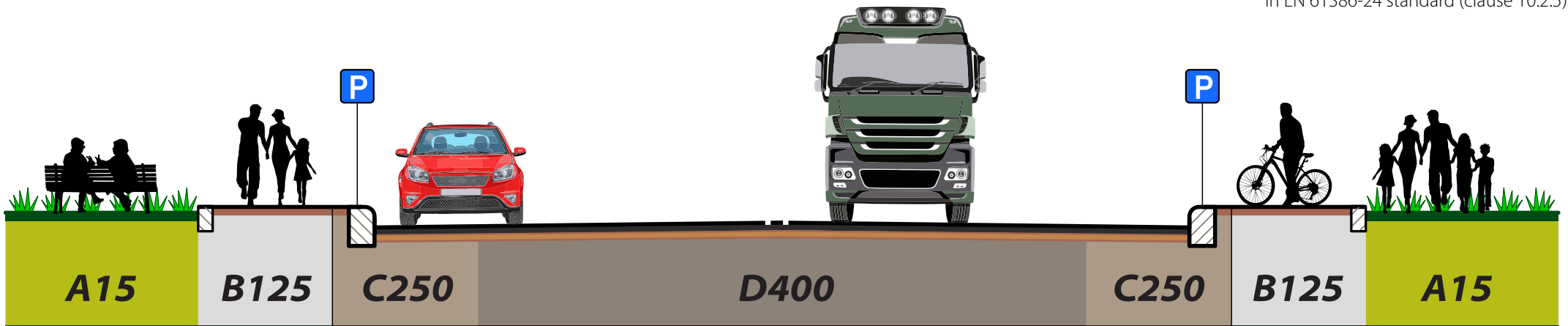
Pedestrian areas and comparable areas, car parks or car parking decks.
- C250

Area of kerbside channels of roads which, when measured from kerb edge, extends a maximum of 0.5m into carriageway and a maximum of 0.2 m into pedestrian area.
- D400

Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.

Installation place:	 A15	 B125	 C250	 D400
Single wheel load:	10 kN	60 kN	100 kN	120 kN
Minimum depth of embedment				
DN/OD 50 mm:	0.3 m	0.4 m	0.5 m	0.6 m
DN/OD 63 mm:	0.3 m	0.5 m	0.6 m	0.6 m
DN/OD 75 mm:	0.3 m	0.5 m	0.6 m	0.7 m
DN/OD 90 mm:	0.3 m	0.5 m	0.6 m	0.7 m
DN/OD 110 mm:	0.3 m	0.5 m	0.7 m	0.8 m
DN/OD 125 mm:	0.3 m	0.5 m	0.7 m	0.8 m
DN/OD 160 mm:	0.3 m	0.6 m	0.7 m	0.8 m

* by not exceeding 5% borderline value of initial deflection specified in EN 61386-24 standard (clause 10.2.5)



CABLE PROTECTION PIPES FOR UNDERGROUND SYSTEMS

DN/OD 50 mm

EVOcab HARD N450

Characteristics accepted in the calculations:

Water table level from the top of the ground surface - 0,1 m

Unit weight of dry soil - 20 kN/m³

Unit weight of wet soil - 11 kN/m³

Unit weight of water - 10 kN/m³

Standard Proctor Density (SPD) ≥ 95 %	Place of installation:	Group 1 (class A15) - Areas which can only be used by pedestrians and pedal cyclists (single wheel load < 10 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		62.3	40.1	30.9	26.9	25.3	25.0	25.5	26.4	29.7	33.2	35.0	38.9	43.2	45.2	75.8	117.0
Initial deflection of the pipe after construction, %		2.87	2.56	2.43	2.37	2.35	2.34	2.35	2.36	2.40	2.44	2.46	2.51	2.56	2.59	2.93	3.33
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 2 (class B125) - Pedestrian areas and comparable areas, car parks or car parking decks (single wheel load 60 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		340.1	196.3	130.9	96.4	76.3	64.1	56.4	51.4	49.8	50.0	50.6	52.7	57.3	58.9	84.9	122.1
Initial deflection of the pipe after construction, %		6.62	4.66	3.76	3.29	3.02	2.85	2.75	2.68	2.65	2.65	2.65	2.67	2.73	2.74	3.01	3.35
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 3 (class C250) - For gully tops, installed in the area of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0,5 m into carriageway and a maximum of 0,2 m into the pedestrian area (single wheel load 100 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		562.3	321.3	210.9	151.9	117.2	95.4	81.1	71.4	67.3	65.5	65.3	67.3	73.6	74.9	93.1	126.7
Initial deflection of the pipe after construction, %		9.64	6.35	4.84	4.04	3.56	3.27	3.07	2.94	2.88	2.85	2.84	2.86	2.93	2.95	3.11	3.40
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 4 (class D400) - Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all type of road vehicles (single wheel load 120 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		673.4	383.8	250.9	179.7	137.6	111.0	93.4	81.4	75.6	72.7	71.9	73.5	80.2	81.4	96.9	128.8
Initial deflection of the pipe after construction, %		11.15	7.19	5.38	4.41	3.84	3.47	3.24	3.07	2.99	2.94	2.93	2.94	3.02	3.03	3.15	3.42

5.38

— Initial deflection of the pipe exceeds 5% borderline specified in EN 61386-24 standard (clause 10.2.5)

Notes.

Groups of place of installation according to EN 124-1 standard.

For backfilling of the trench, it is recommended to use G1, G2, G3, G4 soil group material.

Soil groups - according to CEN/TR 1046 standard annex A table A.1.

Soil type: G1, G2, G3 – granular, e.g., crushed rock, river and beach gravel, dune and drift sand, moraine sand, weathered gravel, liquid sand, loamy sand, G4 - cohesive, e.g., loess, loam, alluvial marl, clay.

Initial deflection of the pipe must not exceed 5% borderline specified in EN 61386-24 standard.



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CABLE PROTECTION PIPES FOR UNDERGROUND SYSTEMS

DN/OD 63 mm

EVOcab HARD N450

Characteristics accepted in the calculations:

Water table level from the top of the ground surface - 0,1 m

Unit weight of dry soil - 20 kN/m³

Unit weight of wet soil - 11 kN/m³

Unit weight of water - 10 kN/m³

Standard Proctor Density (SPD) ≥ 95 %	Place of installation:	Group 1 (class A15) - Areas which can only be used by pedestrians and pedal cyclists (single wheel load < 10 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		62.4	40.2	31.1	27.1	25.5	25.2	25.6	26.6	29.8	33.3	35.2	39.0	43.3	45.3	75.9	117.1
Initial deflection of the pipe after construction, %		3.00	2.64	2.49	2.43	2.40	2.39	2.40	2.41	2.46	2.51	2.53	2.58	2.64	2.67	3.05	3.48
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 2 (class B125) - Pedestrian areas and comparable areas, car parks or car parking decks (single wheel load 60 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		340.2	196.5	131.1	96.5	76.5	64.2	56.5	51.6	49.9	50.2	50.7	52.9	57.4	59.1	85.1	122.2
Initial deflection of the pipe after construction, %		7.29	5.04	4.02	3.48	3.16	2.97	2.85	2.77	2.74	2.74	2.74	2.77	2.82	2.84	3.14	3.50
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 3 (class C250) - For gully tops, installed in the area of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0,5 m into carriageway and a maximum of 0,2 m into the pedestrian area (single wheel load 100 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		562.4	321.5	211.1	152.1	117.3	95.5	81.2	71.6	67.4	65.7	65.4	67.4	73.7	75.1	93.2	126.8
Initial deflection of the pipe after construction, %		10.74	6.97	5.25	4.33	3.79	3.45	3.22	3.07	3.00	2.97	2.96	2.98	3.06	3.07	3.25	3.56
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 4 (class D400) - Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all type of road vehicles (single wheel load 120 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		673.5	384.0	251.1	179.8	137.7	111.1	93.5	81.6	75.8	72.8	72.1	73.6	80.4	81.6	97.1	129.0
Initial deflection of the pipe after construction, %		12.47	7.94	5.86	4.75	4.10	3.68	3.41	3.22	3.13	3.07	3.06	3.07	3.15	3.17	3.30	3.58

5.38

— Initial deflection of the pipe exceeds 5% borderline specified in EN 61386-24 standard (clause 10.2.5)

Notes.

Groups of place of installation according to EN 124-1 standard.

For backfilling of the trench, it is recommended to use G1, G2, G3, G4 soil group material.

Soil groups - according to CEN/TR 1046 standard annex A table A.1.

Soil type: G1, G2, G3 – granular, e.g., crushed rock, river and beach gravel, dune and drift sand, moraine sand, weathered gravel, liquid sand, loamy sand, G4 - cohesive, e.g., loess, loam, alluvial marl, clay.

Initial deflection of the pipe must not exceed 5% borderline specified in EN 61386-24 standard.

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CABLE PROTECTION PIPES FOR UNDERGROUND SYSTEMS

DN/OD 75 mm

EVOcab HARD N450

Characteristics accepted in the calculations:

Water table level from the top of the ground surface - 0,1 m

Unit weight of dry soil - 20 kN/m³

Unit weight of wet soil - 11 kN/m³

Unit weight of water - 10 kN/m³

Standard Proctor Density (SPD) ≥ 95 %	Place of installation:	Group 1 (class A15) - Areas which can only be used by pedestrians and pedal cyclists (single wheel load < 10 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		62.5	40.3	31.2	27.2	25.6	25.3	25.8	26.7	29.9	33.5	35.3	39.2	43.4	45.4	76.0	117.2
Initial deflection of the pipe after construction, %		3.10	2.70	2.54	2.47	2.44	2.43	2.44	2.45	2.50	2.55	2.58	2.64	2.70	2.73	3.13	3.59
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 2 (class B125) - Pedestrian areas and comparable areas, car parks or car parking decks (single wheel load 60 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		340.3	196.6	131.2	96.6	76.6	64.4	56.6	51.7	50.1	50.3	50.9	53.0	57.5	59.2	85.2	122.4
Initial deflection of the pipe after construction, %		7.77	5.32	4.20	3.61	3.27	3.06	2.93	2.84	2.81	2.80	2.81	2.83	2.90	2.92	3.23	3.61
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 3 (class C250) - For gully tops, installed in the area of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0,5 m into carriageway and a maximum of 0,2 m into the pedestrian area (single wheel load 100 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		562.5	321.6	211.2	152.2	117.4	95.6	81.3	71.7	67.6	65.8	65.5	67.5	73.8	75.2	93.4	126.9
Initial deflection of the pipe after construction, %		11.54	7.43	5.54	4.54	3.95	3.58	3.33	3.17	3.09	3.05	3.04	3.06	3.15	3.16	3.34	3.67
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 4 (class D400) - Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all type of road vehicles (single wheel load 120 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		673.7	384.1	251.2	180.0	137.8	111.2	93.7	81.7	75.9	72.9	72.2	73.8	80.5	81.7	97.2	129.1
Initial deflection of the pipe after construction, %		13.43	8.48	6.21	5.00	4.29	3.84	3.54	3.33	3.23	3.17	3.15	3.16	3.25	3.27	3.40	3.70

5.38

— Initial deflection of the pipe exceeds 5% borderline specified in EN 61386-24 standard (clause 10.2.5)

Notes.

Groups of place of installation according to EN 124-1 standard.

For backfilling of the trench, it is recommended to use G1, G2, G3, G4 soil group material.

Soil groups - according to CEN/TR 1046 standard annex A table A.1.

Soil type: G1, G2, G3 – granular, e.g., crushed rock, river and beach gravel, dune and drift sand, moraine sand, weathered gravel, liquid sand, loamy sand, G4 - cohesive, e.g., loess, loam, alluvial marl, clay.

Initial deflection of the pipe must not exceed 5% borderline specified in EN 61386-24 standard.



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CABLE PROTECTION PIPES FOR UNDERGROUND SYSTEMS

DN/OD 90 mm

EVOcab HARD N450

Characteristics accepted in the calculations:

Water table level from the top of the ground surface - 0,1 m

Unit weight of dry soil - 20 kN/m³

Unit weight of wet soil - 11 kN/m³

Unit weight of water - 10 kN/m³

Standard Proctor Density (SPD) ≥ 95 %	Place of installation:	Group 1 (class A15) - Areas which can only be used by pedestrians and pedal cyclists (single wheel load < 10 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		62.7	40.5	31.3	27.3	25.7	25.5	25.9	26.8	30.1	33.6	35.5	39.3	43.6	45.6	76.2	117.4
Initial deflection of the pipe after construction, %		3.27	2.81	2.63	2.54	2.51	2.50	2.50	2.52	2.57	2.64	2.67	2.73	2.80	2.83	3.28	3.78
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 2 (class B125) - Pedestrian areas and comparable areas, car parks or car parking decks (single wheel load 60 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		340.5	196.7	131.3	96.8	76.8	64.5	56.8	51.8	50.2	50.4	51.0	53.2	57.7	59.3	85.4	122.5
Initial deflection of the pipe after construction, %		8.62	5.80	4.52	3.85	3.46	3.22	3.06	2.96	2.92	2.92	2.92	2.95	3.02	3.04	3.38	3.79
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 3 (class C250) - For gully tops, installed in the area of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0,5 m into carriageway and a maximum of 0,2 m into the pedestrian area (single wheel load 100 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		562.7	321.7	211.3	152.3	117.6	95.8	81.5	71.8	67.7	66.0	65.7	67.7	74.0	75.3	93.5	127.1
Initial deflection of the pipe after construction, %		12.94	8.22	6.06	4.91	4.23	3.80	3.53	3.34	3.24	3.20	3.19	3.21	3.30	3.32	3.51	3.86
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 4 (class D400) - Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all type of road vehicles (single wheel load 120 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		673.8	384.2	251.3	180.1	138.0	111.4	93.8	81.8	76.0	73.1	72.3	73.9	80.6	81.8	97.4	129.2
Initial deflection of the pipe after construction, %		15.10	9.43	6.82	5.44	4.62	4.10	3.76	3.52	3.40	3.33	3.31	3.32	3.42	3.44	3.57	3.89

5.38

— Initial deflection of the pipe exceeds 5% borderline specified in EN 61386-24 standard (clause 10.2.5)

Notes.

Groups of place of installation according to EN 124-1 standard.

For backfilling of the trench, it is recommended to use G1, G2, G3, G4 soil group material.

Soil groups - according to CEN/TR 1046 standard annex A table A.1.

Soil type: G1, G2, G3 – granular, e.g., crushed rock, river and beach gravel, dune and drift sand, moraine sand, weathered gravel, liquid sand, loamy sand, G4 - cohesive, e.g., loess, loam, alluvial marl, clay.

Initial deflection of the pipe must not exceed 5% borderline specified in EN 61386-24 standard.

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CABLE PROTECTION PIPES FOR UNDERGROUND SYSTEMS

DN/OD 110 mm

EVOcab HARD N450

Characteristics accepted in the calculations:

Water table level from the top of the ground surface - 0,1 m

Unit weight of dry soil - 20 kN/m³

Unit weight of wet soil - 11 kN/m³

Unit weight of water - 10 kN/m³

Standard Proctor Density (SPD) ≥ 95 %	Place of installation:	Group 1 (class A15) - Areas which can only be used by pedestrians and pedal cyclists (single wheel load < 10 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		62.9	40.7	31.6	27.5	26.0	25.7	26.1	27.1	30.3	33.8	35.7	39.5	43.8	45.8	76.4	117.6
Initial deflection of the pipe after construction, %		3.47	2.95	2.73	2.63	2.59	2.58	2.59	2.60	2.66	2.73	2.77	2.84	2.92	2.96	3.45	3.98
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 2 (class B125) - Pedestrian areas and comparable areas, car parks or car parking decks (single wheel load 60 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		340.7	197.0	131.6	97.0	77.0	64.7	57.0	52.1	50.4	50.7	51.2	53.4	57.9	59.6	85.6	122.7
Initial deflection of the pipe after construction, %		9.62	6.38	4.90	4.12	3.67	3.40	3.22	3.11	3.06	3.05	3.05	3.08	3.16	3.18	3.55	3.99
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 3 (class C250) - For gully tops, installed in the area of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0,5 m into carriageway and a maximum of 0,2 m into the pedestrian area (single wheel load 100 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		562.9	322.0	211.6	152.5	117.8	96.0	81.7	72.1	67.9	66.2	65.9	67.9	74.2	75.6	93.7	127.3
Initial deflection of the pipe after construction, %		14.60	9.15	6.66	5.34	4.56	4.07	3.75	3.53	3.43	3.37	3.35	3.38	3.49	3.50	3.70	4.06
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 4 (class D400) - Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all type of road vehicles (single wheel load 120 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		674.0	384.5	251.6	180.3	138.2	111.6	94.0	82.1	76.3	73.3	72.6	74.1	80.8	82.1	97.6	129.4
Initial deflection of the pipe after construction, %		17.08	10.54	7.55	5.95	5.00	4.41	4.02	3.75	3.60	3.52	3.49	3.50	3.62	3.63	3.77	4.10

5.38

— Initial deflection of the pipe exceeds 5% borderline specified in EN 61386-24 standard (clause 10.2.5)

Notes.

Groups of place of installation according to EN 124-1 standard.

For backfilling of the trench, it is recommended to use G1, G2, G3, G4 soil group material.

Soil groups - according to CEN/TR 1046 standard annex A table A.1.

Soil type: G1, G2, G3 – granular, e.g., crushed rock, river and beach gravel, dune and drift sand, moraine sand, weathered gravel, liquid sand, loamy sand, G4 - cohesive, e.g., loess, loam, alluvial marl, clay.

Initial deflection of the pipe must not exceed 5% borderline specified in EN 61386-24 standard.



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CABLE PROTECTION PIPES FOR UNDERGROUND SYSTEMS

DN/OD 125 mm

EVOcab HARD N450

Characteristics accepted in the calculations:

Water table level from the top of the ground surface - 0,1 m

Unit weight of dry soil - 20 kN/m³

Unit weight of wet soil - 11 kN/m³

Unit weight of water - 10 kN/m³

Standard Proctor Density (SPD) ≥ 95 %	Place of installation:	Group 1 (class A15) - Areas which can only be used by pedestrians and pedal cyclists (single wheel load < 10 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		63.1	40.9	31.7	27.7	26.1	25.8	26.3	27.2	30.4	34.0	35.8	39.7	43.9	46.0	76.5	117.7
Initial deflection of the pipe after construction, %		3.48	2.95	2.74	2.64	2.60	2.59	2.59	2.61	2.67	2.74	2.77	2.85	2.93	2.96	3.46	3.99
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 2 (class B125) - Pedestrian areas and comparable areas, car parks or car parking decks (single wheel load 60 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		340.8	197.1	131.7	97.1	77.1	64.9	57.1	52.2	50.6	50.8	51.4	53.5	58.1	59.7	85.7	122.9
Initial deflection of the pipe after construction, %		9.66	6.40	4.92	4.14	3.68	3.41	3.23	3.12	3.07	3.06	3.06	3.09	3.17	3.19	3.56	4.00
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 3 (class C250) - For gully tops, installed in the area of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0,5 m into carriageway and a maximum of 0,2 m into the pedestrian area (single wheel load 100 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		563.1	322.1	211.7	152.7	118.0	96.1	81.8	72.2	68.1	66.3	66.0	68.1	74.4	75.7	93.9	127.5
Initial deflection of the pipe after construction, %		14.65	9.19	6.69	5.36	4.58	4.08	3.76	3.54	3.43	3.38	3.36	3.39	3.49	3.51	3.71	4.07
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 4 (class D400) - Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all type of road vehicles (single wheel load 120 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		674.2	384.6	251.7	180.5	138.4	111.8	94.2	82.2	76.4	73.5	72.7	74.3	81.0	82.2	97.7	129.6
Initial deflection of the pipe after construction, %		17.15	10.58	7.57	5.97	5.02	4.42	4.03	3.76	3.61	3.53	3.50	3.51	3.63	3.64	3.78	4.11

5.38

— Initial deflection of the pipe exceeds 5% borderline specified in EN 61386-24 standard (clause 10.2.5)

Notes.

Groups of place of installation according to EN 124-1 standard.

For backfilling of the trench, it is recommended to use G1, G2, G3, G4 soil group material.

Soil groups - according to CEN/TR 1046 standard annex A table A.1.

Soil type: G1, G2, G3 – granular, e.g., crushed rock, river and beach gravel, dune and drift sand, moraine sand, weathered gravel, liquid sand, loamy sand, G4 - cohesive, e.g., loess, loam, alluvial marl, clay.

Initial deflection of the pipe must not exceed 5% borderline specified in EN 61386-24 standard.



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CABLE PROTECTION PIPES FOR UNDERGROUND SYSTEMS

DN/OD 160 mm

EVOcab HARD N450

Characteristics accepted in the calculations:

Water table level from the top of the ground surface - 0,1 m

Unit weight of dry soil - 20 kN/m³

Unit weight of wet soil - 11 kN/m³

Unit weight of water - 10 kN/m³

Standard Proctor Density (SPD) ≥ 95 %	Place of installation:	Group 1 (class A15) - Areas which can only be used by pedestrians and pedal cyclists (single wheel load < 10 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		63.4	41.2	32.1	28.1	26.5	26.2	26.7	27.6	30.8	34.3	36.2	40.0	44.3	46.3	76.9	118.1
Initial deflection of the pipe after construction, %		3.63	3.05	2.81	2.71	2.66	2.65	2.65	2.67	2.74	2.81	2.85	2.93	3.01	3.05	3.57	4.13
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 2 (class B125) - Pedestrian areas and comparable areas, car parks or car parking decks (single wheel load 60 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		341.2	197.5	132.1	97.5	77.5	65.3	57.5	52.6	50.9	51.2	51.7	53.9	58.4	60.1	86.1	123.3
Initial deflection of the pipe after construction, %		10.36	6.80	5.18	4.33	3.84	3.54	3.34	3.22	3.16	3.15	3.16	3.19	3.27	3.29	3.68	4.13
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 3 (class C250) - For gully tops, installed in the area of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0,5 m into carriageway and a maximum of 0,2 m into the pedestrian area (single wheel load 100 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		563.4	322.5	212.1	153.1	118.3	96.5	82.2	72.6	68.4	66.7	66.4	68.4	74.7	76.1	94.3	127.8
Initial deflection of the pipe after construction, %		15.80	9.84	7.11	5.66	4.81	4.27	3.92	3.68	3.56	3.50	3.48	3.51	3.62	3.64	3.84	4.21
Standard Proctor Density (SPD) ≥ 98 %	Place of installation:	Group 4 (class D400) - Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all type of road vehicles (single wheel load 120 kN) .															
Depth of embedment (H) from the ground surface to the top of the pipe, m		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	3.5	5.5
Total vertical load (Q) to the pipe after construction, kN/m ²		674.5	385.0	252.1	180.8	138.7	112.1	94.6	82.6	76.8	73.8	73.1	74.7	81.4	82.6	98.1	130.0
Initial deflection of the pipe after construction, %		18.52	11.36	8.07	6.32	5.29	4.64	4.21	3.91	3.75	3.66	3.63	3.64	3.77	3.78	3.91	4.25

5.38

— Initial deflection of the pipe exceeds 5% borderline specified in EN 61386-24 standard (clause 10.2.5)

Notes.

Groups of place of installation according to EN 124-1 standard.

For backfilling of the trench, it is recommended to use G1, G2, G3, G4 soil group material.

Soil groups - according to CEN/TR 1046 standard annex A table A.1.

Soil type: G1, G2, G3 – granular, e.g., crushed rock, river and beach gravel, dune and drift sand, moraine sand, weathered gravel, liquid sand, loamy sand, G4 - cohesive, e.g., loess, loam, alluvial marl, clay.

Initial deflection of the pipe must not exceed 5% borderline specified in EN 61386-24 standard.

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