

**Characteristic**

Graepel-City has both upward and downward formations. The surface of Graepel-City consists of small embossed (diameter of 4.5 mm) and debossed holes (diameter of 8 mm) that are arranged in staggered rows. Graepel-City is based on Graepel-Indoor perforation and supplements it by drain holes. It provides good slip resistance and drainage effects. The open area for standard grating widths is approx. 6%; the maximum embossed field is 460 mm.

**Application**

Graepel-City is designed for use in public buildings and outside facilities. This perforation provides a very safe and comfortable walking surface for pedestrians and cyclists. Water and sediments of small grain size can fall through the drain holes, but it is sufficiently opaque even on steps. If barefoot walking is required, the Graepel-Garden perforation is recommended. Graepel-City is also used in the industrial sector, e.g. in inspection pits for cars and commercial vehicles.

**Options**

- This perforation is program controllable. Thus, individual embossments can be created.
- The standard edge perforation may be omitted.

Dimensions		Graepel-City
Material thickness	DD 11 raw	2.0   2.5 mm
	DD 11 hot-dip galvanized   DK 51 D pre-galvanized	2.0   2.5 mm
	Stainless steel	2.0 mm
	EN AW-5754	2.0   2.5   3.0 mm
Dimensions	Lengths (L) up to Length divider	6,000 mm 45 mm
	Standard grating widths <sup>1</sup> (B)	182 to 356 mm in steps of 22.5 mm
	DD 11   DK 51 D   Stainless steel   EN AW-5754 Width divider	22.5 mm
	Heights (H)	30   50   75 mm

<sup>1</sup>Other dimensions on request.

Anti-slip values		
Material	Evaluation of anti-slip	Displacement
DD 11 hot-dip galvanized	R 11	V 10
Stainless steel	R 13	V 10
EN AW-5754	R 12	V 10



Further details on the perforation on our website

Grating width [mm]	Weight per meter for Graepel-City for material thickness: D [in kg/m]														
	2.0					2.5					3.0				
	DD 11** / Stainless steel Height [mm]	EN AW-5754 Height [mm]	DD 11** Height [mm]	EN AW-5754 Height [mm]	EN AW-5754 Height [mm]	DD 11** Height [mm]	EN AW-5754 Height [mm]	EN AW-5754 Height [mm]	DD 11** Height [mm]	EN AW-5754 Height [mm]	EN AW-5754 Height [mm]	DD 11** Height [mm]	EN AW-5754 Height [mm]	EN AW-5754 Height [mm]	
182	4.1	4.8	5.6	1.4	1.6	1.9	5.2	6.0	7.0	1.8	2.1	2.4	2.1	2.5	2.9
240	5.0	5.7	6.5	1.7	2.0	2.2	6.3	7.1	8.1	2.2	2.4	2.8	2.6	2.9	3.3
298	6.0	6.6	7.4	2.1	2.3	2.5	7.5	8.3	9.3	2.6	2.8	3.2	3.1	3.4	3.8
330	6.4	7.1	7.9	2.2	2.4	2.7	8.0	8.8	9.8	2.8	3.0	3.4	3.3	3.6	4.1
356	6.9	7.5	8.3	2.4	2.6	2.9	8.6	9.4	10.4	3.0	3.2	3.6	3.5	3.9	4.3

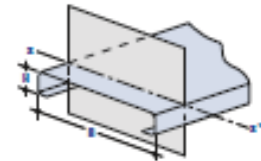
H [mm]	D [mm]	Uniformly distributed load												Concentrated load											
		Replacement load F <sub>q</sub> [in kN] for uniformly distributed load (numerical values apply for single grating)												Load F <sub>q</sub> [in kN] for concentrated load (numerical values apply for single grating)											
		Support length L [mm]				Support length L [mm]				Support length L [mm]				Support length L [mm]											
DD 11, DK 51 D	30	2.0	5.676	3.784	2.838	2.009	1.395	1.025	0.785	0.620	0.502	0.415	0.349	3.548	2.183	1.577	1.234	0.879	0.645	0.493	0.389	0.315	0.260	0.218	
	30	2.5	6.732	4.488	3.366	2.382	1.654	1.215	0.931	0.735	0.596	0.492	0.414	4.208	2.589	1.870	1.464	1.043	0.765	0.584	0.461	0.373	0.308	0.259	
	50	2.0	11.407	7.605	5.703	4.563	3.802	3.259	2.614	2.065	1.673	1.382	1.162	7.129	4.387	3.169	2.480	2.037	1.853	1.501	1.296	1.049	0.866	0.728	
	50	2.5	13.751	9.168	6.876	5.501	4.584	3.929	3.151	2.490	2.017	1.667	1.400	8.595	5.289	3.820	2.989	2.456	2.084	1.809	1.562	1.264	1.044	0.877	
	75	2.0	20.283	13.522	10.141	8.113	6.761	5.795	5.071	4.507	4.057	3.671	3.084	12.677	7.801	5.634	4.409	3.622	3.073	2.669	2.358	2.113	1.913	1.749	
	75	2.5	24.671	16.447	12.336	9.868	8.224	7.049	6.168	5.482	4.934	4.465	3.752	15.419	9.489	6.853	5.363	4.406	3.975	3.246	2.869	2.570	2.327	2.127	
EN AW-5754	30	2.0	4.005	1.780	1.001	0.641	0.445	0.327	0.250	0.198	0.160	0.132	0.111	2.697	1.151	0.638	0.406	0.281	0.206	0.157	0.124	0.100	0.083	0.070	
	30	2.5	4.751	2.111	1.188	0.760	0.528	0.388	0.297	0.235	0.190	0.157	0.132	3.199	1.365	0.757	0.481	0.333	0.244	0.186	0.147	0.119	0.098	0.083	
	30	3.0	5.181	2.303	1.295	0.829	0.576	0.423	0.324	0.256	0.207	0.171	0.144	3.489	1.489	0.825	0.525	0.363	0.266	0.203	0.161	0.130	0.107	0.090	
	50	2.0	8.963	5.930	3.336	2.135	1.482	1.089	0.834	0.659	0.534	0.441	0.371	5.602	3.447	2.125	1.351	0.935	0.685	0.524	0.413	0.335	0.276	0.232	
	50	2.5	10.805	7.149	4.021	2.574	1.787	1.313	1.005	0.794	0.643	0.532	0.447	6.753	4.156	2.562	1.629	1.127	0.826	0.631	0.498	0.403	0.333	0.280	
	50	3.0	12.064	7.986	4.492	2.875	1.997	1.467	1.123	0.887	0.719	0.594	0.499	7.540	4.640	2.862	1.819	1.259	0.923	0.705	0.557	0.451	0.372	0.313	
Stainless steel	75	2.0	15.936	10.624	7.968	5.668	3.936	2.892	2.214	1.749	1.417	1.171	0.984	9.960	6.129	4.427	3.464	2.481	1.819	1.391	1.098	0.888	0.734	0.616	
	75	2.5	19.384	12.923	9.692	6.895	4.788	3.518	2.693	2.128	1.724	1.425	1.197	12.115	7.456	5.385	4.214	3.019	2.213	1.692	1.335	1.081	0.893	0.750	
	75	3.0	21.968	14.645	10.984	7.817	5.428	3.988	3.053	2.413	1.954	1.615	1.357	13.730	8.449	6.102	4.776	3.422	2.508	1.918	1.514	1.225	1.012	0.850	
	30	2.0	6.217	4.144	3.108	2.009	1.395	1.025	0.785	0.620	0.502	0.415	0.349	3.885	2.391	1.727	1.271	0.879	0.645	0.493	0.389	0.315	0.260	0.218	
	50	2.0	12.493	8.329	6.247	4.997	4.164	3.414	2.614	2.065	1.673	1.382	1.162	7.808	4.805	3.470	2.716	2.231	1.893	1.642	1.296	1.049	0.866	0.728	
	75	2.0	22.214	14.810	11.107	8.886	7.405	6.347	5.554	4.937	4.441	3.671	3.084	13.884	8.544	6.171	4.829	3.967	3.366	2.923	2.583	2.314	2.096	1.915	

Lump load	Maximum possible lump load F [in kN] (numerical values apply for DD 11)		
	Load area 200 x 200 mm		
	Material thickness [mm]		
Grating width B [mm]	2.0	2.5	3.0
182***	1.42	2.22	3.19
240	0.94	1.46	2.11
298	0.73	1.14	1.64
330	0.66	1.03	1.49
356	0.62	0.97	1.39

Note concerning lump load  
The values are calculated for gratings which are supported over their whole length. For a given span width, the values stated in this lump load table must not exceed those given in the concentrated load table.

For EN AW-5754, the values in the table must be multiplied by a factor of 0,74.

**Moments of Inertia and section modulus**  
Grating cross-sections (axis X-X<sub>i</sub>)



Note: Only the unperforated area of the two sides is taken into account for the static cross section values for the longitudinal direction of the grating (shaded area).

Bend height H [mm]	Material thickness D [mm]	Moment of inertia I <sub>x</sub> [mm <sup>4</sup> ]	Minimum section modulus W <sub>x</sub> [mm <sup>3</sup> ]
30	2.0	38918.66	2525.54
	2.5	46161.04	2995.52
	3.0	50344.74	3264.69
50	2.0	129645.30	5075.43
	2.5	156300.69	6118.51
	3.0	174605.86	6831.59
75	2.0	344236.50	9024.56
	2.5	418745.73	10977.18
	3.0	474710.43	12440.09

**Conversion of the replacement load F<sub>q</sub> from the table into a distributed load Q**

$$Q = \frac{10^6 \times F_q}{B \times L}$$

with:  
Q - Distributed load for a grating [kN/m<sup>2</sup>]  
F<sub>q</sub> - Replacement load from table with reference to the support width [kN]  
B - Grating width [mm]  
L - Support length [mm]