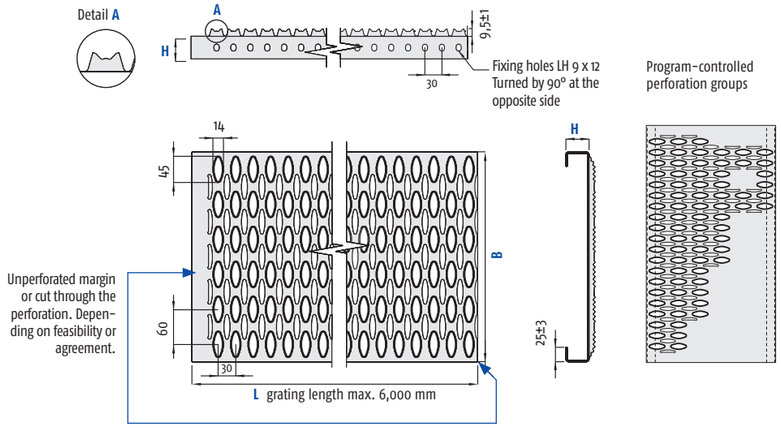


Characteristic

Graepel-Stabil has upward formations. Its surface is characterized by 45 mm long, raised holes in olive shape with serrated edges. The profile height is 9 mm, the open area amounts to approx. 50 %. Despite its wide displacement space and an enormous drainage effect, this perforation has a 15-mm barrier. (A ball ≥ 15 mm will not drop through.) Graepel-Stabil has been certified the highest slip resistance class.
Due to the large embossment height, Graepel-Stabil has a high transverse stiffness of the grating surface which makes embossed field widths of up to 886 mm possible.

Application

This perforation is universally used as safety grating on surfaces, walkways and platforms. It is designed for outdoor applications as its slip resistance is little affected by snow and slush. The use of Graepel-Stabil is advisable in the field of renewable energies as well as in the onshore and offshore sectors. Steps and ladder rungs are also available with Graepel-Stabil perforation.

Options

- This perforation is program controllable. Thus, individual embossments can be created.
- An embossed field of up to 886 mm is possible.
- The standard edge perforation may be omitted.
- Beveled skirting board possible.

	Dimensions	Graepel-Stabil
Material thickness	DD 11 raw DD 11 hot-dip galvanized Stainless steel EN AW-5754 QSTE roh & QSTE hot-dip galvanized	1.5 | 2.0 | 2.5 | 3.0 mm 1.5 | 2.0 | 2.5 | 3.0 mm 1.5 | 2.0 | 2.5 mm 2.0 | 2.5 | 3.0 mm 3.5 mm
Dimensions	**Lengths (L)** up to Length divider **Standard grating widths [1] (B)** DD 11 | DX 51 D | Stainless steel | EN AW-5754 Width divider [1] **Heights (H)**	12,000 mm*** 30 mm 120 to 900 mm in steps of 60 mm 60 mm 40 | 50 | 75 mm

[1] **Grating length and width:** please order standard dimensions which are **divisible by the dividers mentioned** in each case.

Anti-slip values

Material	Evaluation of anti-slip	Displacement
DD 11 hot-dip galvanized	R 13	V 10
DX 51 D pre-galvanized	R 13	V 10
Stainless steel	R 13	V 10
EN AW-5754	R 13	V 10

Further details on the perforation on our website

Weight per meter for Graepel-Stabil for material thickness D [in kg/m]

Grating width [mm]	2.0 DD 11**/ Stainless steel Height [mm]			2.5 DD 11**/ Stainless steel Height [mm]			2.5 EN AW-5754 Height [mm]			3.0 DD 11** Height [mm]			3.0 EN AW-5754 Height [mm]		
	40	50	75	40	50	75	40	50	75	40	50	75	40	50	75
120	3.4	3.7	4.5	4.2	4.6	5.6	1.4	1.6	1.9	4.9	5.4	6.6	1.7	1.8	2.3
180	4.2	4.5	5.3	5.1	5.5	6.5	1.8	1.9	2.2	6.1	6.6	7.8	2.1	2.3	2.7
240	5.0	5.3	6.1	6.1	6.5	7.5	2.1	2.2	2.6	7.3	7.7	8.9	2.5	2.7	3.1
300	5.8	6.1	6.9	7.1	7.5	8.5	2.4	2.6	2.9	8.4	8.9	10.1	2.9	3.1	3.5
360	6.5	6.9	7.7	8.1	8.5	9.5	2.8	2.9	3.3	9.6	10.1	11.3	3.3	3.5	3.9
420	7.3	7.7	8.5	9.1	9.5	10.5	3.1	3.3	3.6	10.8	11.3	12.5	3.7	3.9	4.3
480	8.1	8.4	9.2	10.1	10.5	11.5	3.5	3.6	3.9	12.0	12.5	13.7	4.1	4.3	4.7

Legend
* **Grating length and width:** please order standard dimensions which are divisible by the dividers mentioned in each case.
** Values also apply for DX 51 D
*** Hot-dip galvanized gratings = L /max. 6,000 mm

	H [mm]	D [mm]	Uniformly distributed load – Replacement load Fq [in kN] for uniformly distributed load (numerical values apply for single grating) – Support length L [mm] 500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	Concentrated load – Load Fq [in kN] for concentrated load (numerical values apply for single grating) – Support length L [mm] 500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
DD11, DX 51 D	40	2.0	4.794	3.196	2.397	1.918	1.598	1.370	1.074	0.849	0.688	0.568	0.477	2.997	1.844	1.332	1.042	0.856	0.726	0.631	0.533	0.431	0.356	0.299
	40	2.5	5.684	3.789	2.842	2.274	1.895	1.624	1.275	1.007	0.816	0.674	0.567	3.552	2.186	1.579	1.236	1.015	0.861	0.748	0.632	0.512	0.423	0.355
	40	3.0	6.463	4.309	3.232	2.585	2.154	1.847	1.451	1.147	0.929	0.768	0.645	4.040	2.486	1.795	1.405	1.154	0.979	0.850	0.719	0.582	0.481	0.404
	50	2.0	6.937	4.625	3.469	2.775	2.312	1.982	1.734	1.498	1.213	1.003	0.843	4.336	2.668	1.927	1.508	1.239	1.051	0.913	0.807	0.723	0.628	0.528
	50	2.5	8.293	5.528	4.146	3.317	2.764	2.369	2.073	1.793	1.452	1.200	1.008	5.183	3.189	2.304	1.803	1.481	1.256	1.091	0.964	0.864	0.752	0.632
	50	3.0	9.511	6.340	4.755	3.804	3.170	2.717	2.378	2.058	1.667	1.378	1.158	5.944	3.658	2.642	2.068	1.698	1.441	1.251	1.106	0.991	0.863	0.725
	75	2.0	13.713	9.142	6.856	5.485	4.571	3.918	3.428	3.047	2.743	2.493	2.285	8.571	5.274	3.809	2.981	2.449	2.078	1.804	1.595	1.428	1.294	1.182
	75	2.5	16.591	11.060	8.295	6.636	5.530	4.740	4.148	3.687	3.318	3.016	2.765	10.369	6.381	4.609	3.607	2.963	2.514	2.183	1.929	1.728	1.565	1.430
	75	3.0	19.263	12.842	9.631	7.705	6.421	5.504	4.816	4.281	3.853	3.502	3.210	12.039	7.409	5.351	4.188	3.440	2.919	2.535	2.240	2.007	1.817	1.661
EN AW-5754	40	2.0	3.543	2.304	1.296	0.830	0.576	0.423	0.324	0.256	0.207	0.171	0.144	2.214	1.363	0.826	0.525	0.363	0.266	0.204	0.161	0.130	0.107	0.090
	40	2.5	4.191	2.729	1.535	0.982	0.682	0.501	0.384	0.303	0.246	0.203	0.171	2.619	1.612	0.978	0.622	0.430	0.315	0.241	0.190	0.154	0.127	0.107
	40	3.0	4.754	3.099	1.743	1.116	0.775	0.569	0.436	0.344	0.279	0.231	0.194	2.971	1.829	1.111	0.706	0.488	0.358	0.274	0.216	0.175	0.144	0.121
	50	2.0	5.169	3.446	2.304	1.475	1.024	0.752	0.576	0.455	0.369	0.305	0.256	3.231	1.988	1.436	0.933	0.646	0.473	0.362	0.286	0.231	0.191	0.160
	50	2.5	6.169	4.113	2.753	1.762	1.224	0.899	0.688	0.544	0.440	0.364	0.306	3.856	2.373	1.714	1.115	0.771	0.565	0.432	0.341	0.276	0.228	0.192
	50	3.0	7.063	4.709	3.155	2.019	1.402	1.030	0.789	0.623	0.505	0.417	0.351	4.414	2.717	1.962	1.278	0.884	0.648	0.495	0.391	0.317	0.261	0.220
	75	2.0	10.349	6.899	5.175	4.140	2.941	2.161	1.654	1.307	1.059	0.875	0.735	6.468	3.980	2.875	2.250	1.848	1.359	1.039	0.820	0.664	0.548	0.460
	75	2.5	12.509	8.339	6.255	5.004	3.557	2.614	2.001	1.581	1.281	1.058	0.889	7.818	4.811	3.475	2.719	2.234	1.644	1.257	0.992	0.803	0.663	0.557
	75	3.0	14.509	9.673	7.255	5.804	4.129	3.034	2.323	1.835	1.487	1.229	1.032	9.068	5.580	4.030	3.154	2.591	1.908	1.459	1.152	0.932	0.770	0.647
Stainless steel	40	2.0	5.251	3.501	2.626	2.100	1.750	1.403	1.074	0.849	0.688	0.568	0.477	3.282	2.020	1.459	1.142	0.938	0.796	0.675	0.533	0.431	0.356	0.299
	40	2.5	6.225	4.150	3.113	2.490	2.075	1.665	1.275	1.007	0.816	0.674	0.567	3.891	2.394	1.729	1.353	1.112	0.943	0.801	0.632	0.512	0.423	0.355
	50	2.0	7.598	5.065	3.799	3.039	2.533	2.171	1.896	1.498	1.213	1.003	0.843	4.749	2.922	2.111	1.652	1.357	1.151	1.000	0.883	0.761	0.628	0.528
	50	2.5	9.082	6.055	4.541	3.633	3.027	2.595	2.269	1.793	1.452	1.200	1.008	5.677	3.493	2.523	1.974	1.622	1.376	1.195	1.056	0.910	0.752	0.632
	75	2.0	15.019	10.013	6.008	5.006	4.291	3.755	3.338	3.779	3.004	2.731	2.393	9.387	5.776	4.172	3.265	2.682	2.276	1.976	1.746	1.564	1.417	1.295
	75	2.5	18.171	12.114	9.085	7.268	5.192	4.543	5.601	4.038	3.634	3.304	2.898	11.357	6.989	5.047	3.950	3.245	2.753	2.391	2.113	1.893	1.714	1.566

Lump load

Grating width B [mm]	Maximum possible lump load F [in kN] (numerical values apply for DD 11) – Load area 200 x 200 mm – Material thickness [mm] 2.0	2.5	3.0
240	1.93	2.48	3.13
300	1.89	2.45	2.99
360	1.84	2.42	2.86
420	1.77	2.35	2.73
480	1.70	2.28	2.60
540	1.62	2.18	2.47
600	1.53	2.07	2.34
660	1.43	1.95	2.21
720	1.31	1.79	2.08
780	1.19	1.62	1.95
840	1.06	1.44	1.82
900	0.92	1.23	1.70

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**.

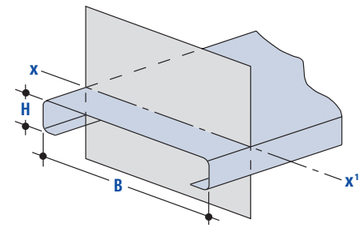
Conversion of the replacement load Fq from the table into a distributed load Q

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

with:
Q = Distributed load for a grating [kN/m²]
Fq = Replacement load from table with reference to the support width [kN]
B = Grating width [mm]
L = Support length [mm]

Moments of inertia and section modulus

Grating cross-sections (axis X-X1)



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_x [mm⁴]	Minimum section modulus W_x [mm³]
40	2.0	53285.69	2133.24
	2.5	63235.29	2528.98
	3.0	71984.66	2875.85
50	2.0	94048.85	3086.61
	2.5	112537.08	3689.74
	3.0	129197.16	4231.67
75	2.0	267091.69	6101.38
	2.5	323383.88	7381.86
	3.0	375747.85	8570.70

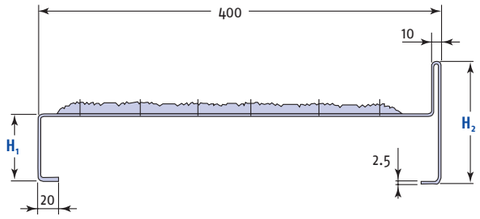
■ | ■ | ■ | ■ = Color coding for load values of the stock items

Available at short notice from stock				L = 3,000 mm	L = 6.000 mm
Material	H [mm]	D [mm]	B [mm]	Order number	Order number
DD11 raw	40	2,0	120	60 2100 0071 001	
	40	2,0	180	60 2100 0185 001	60 2100 0185 601
	40	2,0	240	60 2100 0300 001	60 2100 0300 601
	40	2,0	300	60 2100 3062 001	60 2100 3062 601
	40	2,0	360	60 2100 3063 001	60 2100 3063 601
	40	2,0	420	60 2100 3064 001	60 2100 3064 601
	40	2,0	480	60 2100 3065 001	60 2100 3065 601
	40	2,5	120*	60 2100 3066 001	
	40	2,5	180	60 2100 3067 001	60 2100 3067 601
	40	2,5	240	60 2100 3068 001	60 2100 3068 601
	40	2,5	300	60 2100 3069 001	60 2100 3069 601
	40	2,5	360	60 2100 3070 001	60 2100 3070 601
	40	2,5	420	60 2100 3071 001	60 2100 3071 601
	40	2,5	480	60 2100 3072 001	60 2100 3072 601
	50	2,5	120	60 2100 3080 001	
	50	2,5	180	60 2100 3081 001	60 21003081 601
	50	2,5	240	60 2100 3082 001	60 21003082 601
	50	2,5	300	60 2100 3083 001	60 21003083 601
	50	2,5	360	60 2100 3084 001	60 21003084 601
	50	2,5	420	60 2100 3085 001	60 21003085 601
	50	2,5	480	60 2100 3086 001	60 21003086 601
	75	2,5	120	60 2100 1044 001	
	75	2,5	180	60 2100 1043 001	60 2100 1043 601
	75	2,5	240	60 2100 1033 001	60 2100 1033 601
	75	2,5	300	60 2100 1040 001	60 2100 1040 601
	75	2,5	360	60 2100 1042 001	60 2100 1042 601
	75	2,5	420	60 2100 3257 001	60 2100 3257 601
	75	2,5	480	60 2100 3036 001	60 2100 3036 601
DD11 hot-dip galvanized	40	2.0	120*	60 2100 0071 002	
	40	2.0	180	60 2100 0185 002	6 0210 0185 602
	40	2.0	240	60 2100 0300 002	60 2100 0300 602
	40	2.0	300	60 2100 3062 002	60 2100 3062 602
	40	2.0	360	60 2100 3063 002	60 2100 3063 602
	40	2.0	420	60 2100 3064 002	60 2100 3064 602
	40	2.0	480	60 2100 3065 002	60 2100 3065 602
	40	2.5	120*	60 2100 3066 002	
	40	2.5	180	60 2100 3067 002	60 2100 3067 602
	40	2.5	240	60 2100 3068 002	60 2100 3068 602
	40	2.5	300	60 2100 3069 002	60 2100 3069 602
	40	2.5	360	60 2100 3070 002	60 2100 3070 602
	40	2.5	420	60 2100 3071 002	60 2100 3071 602
	40	2.5	480	60 2100 3072 002	60 2100 3072 602
	50	2.5	120*	60 2100 3080 002	
	50	2.5	180	60 2100 3081 002	60 2100 3081 602
	50	2.5	240	60 2100 3082 002	60 2100 3082 602
	50	2.5	300	60 2100 3083 002	60 2100 3083 602
	50	2.5	360	60 2100 3084 002	60 2100 3084 602
	50	2.5	420	60 2100 3085 002	60 2100 3085 602
	50	2.5	480	60 2100 3086 002	60 2100 3086 602
	75	2.5	120*	60 2100 1044 002	
	75	2.5	180	60 2100 1043 002	60 2100 1043 602
	75	2.5	240	60 2100 1033 002	60 2100 1033 602
	75	2.5	300	60 2100 1040 002	60 2100 1040 602
	75	2.5	360	60 2100 1042 002	60 2100 1042 602
	75	2.5	420	60 2100 3257 002	60 2100 3257 602
	75	2.5	480	60 2100 3036 002	60 2100 3036 602

Skirting board grating

Available at short notice from stock					L = 6,000 mm
Material	H1 [mm]	H2 [mm]	D [mm]	B [mm]	Order number
Aluminum EN AW-5754	50	100	2.5	400	60 2100 2532 003
	65	121	2.5	400	60 2100 1971 003

Standard version: Graepel-Stabil
Other perforations on request.



Order information

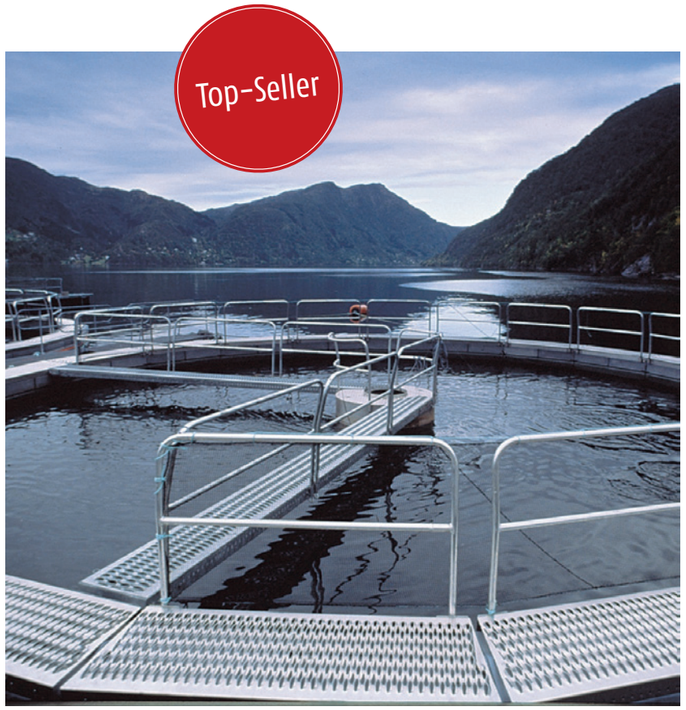
Graepel-Stabil (except for DD 11 hot-dip galvanized) is available up to **a length of 12,000 mm**. Please note that grating lengths over 6,000 mm are difficult to handle and cost intensive due to their high weight.

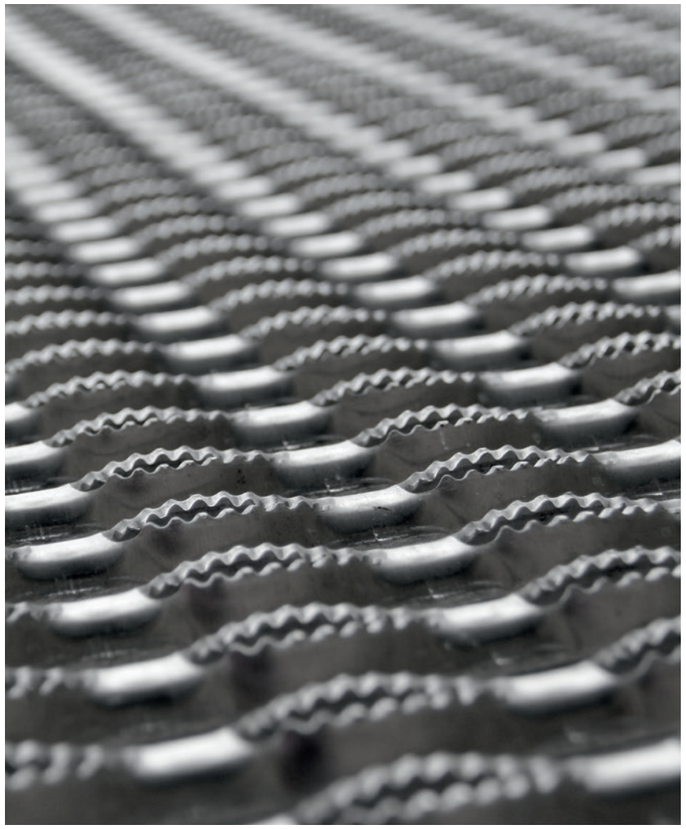
Upon request, the gratings are cut to length. Please specify the required length when ordering. Please take account of the length divider of 30 mm.

Hot-dip galvanized gratings are hot-dip galvanized after sawing to ensure optimum corrosion protection.

Available at short notice from stock				L = 3,000 mm	L = 6.000 mm
	H [mm]	D [mm]	B [mm]	Order number	Order number
Aluminium EN AW-5754	40	2,5	180	60 2100 3067 003	60 2100 3067 603
	40	2,5	240	60 2100 3068 003	60 2100 3068 603
	40	2,5	300	60 2100 3069 003	60 2100 3069 603
	40	2,5	400**	60 2100 3206 003	60 2100 3206 603
	50	2,5	300	60 2100 3083 003	60 2100 3083 603
	50	2,5	400**	60 2100 3047 003	60 2100 3047 603
	75	2,5	120*	60 2100 0044 003	
	75	2,5	300	60 2100 1040 003	60 2100 1040 603
	75	2,5	420	60 2100 3257 003	60 2100 3257 603
	75	2,5	480	60 2100 3036 003	60 2100 3036 603
Stainless steel Material no. 1.4301	40	2,0	120*	60 2101 2952 004	
	40	2,0	180	60 2100 0185 004	60 2100 0185 604
	40	2,0	240	60 2100 0300 004	60 2100 0300 604
	40	2,0	300	60 2100 3062 004	602100 3062 604
Stainless steel Material no. 1.4404	40	2,0	120*	60 2100 2952 007	60 2101 2952 007
	40	2,0	180	60 2100 0185 007	60 2100 0185 607
	40	2,0	240	60 2100 0300 007	60 2100 0300 607
	40	2,0	300	60 2100 3062 007	60 2100 3062 607

Graepel-Stabil
Graepel gratings





Legend
* Available only up to a length of 3,000 mm
** Perforation group width 360 mm

■ | ■ | ■ | ■ = Color coding for load values of the stock items