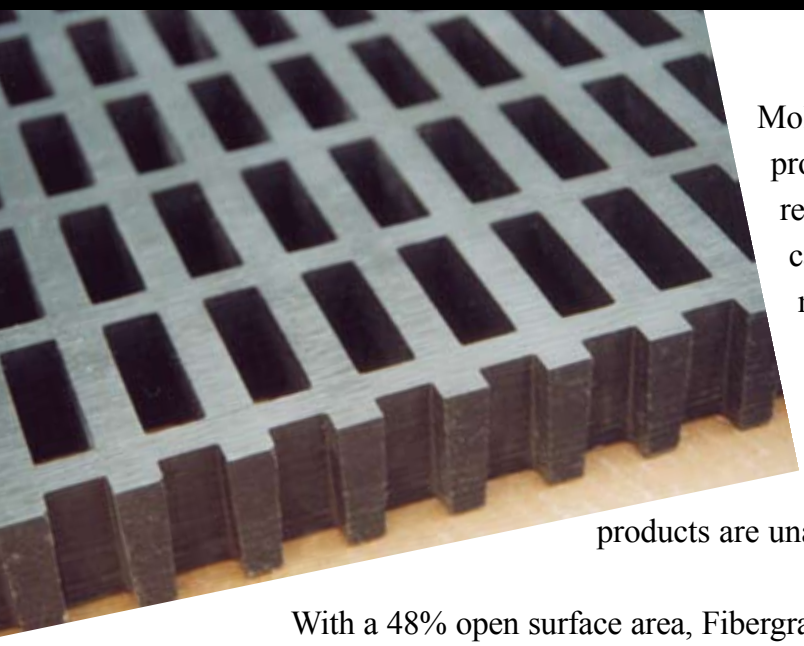
High Load Capacity Grating



Molded High Load Capacity (HLC) grating is yet another product in the arsenal of engineered fiberglass reinforced plastic (FRP) solutions by Fibergrate. While capitalizing on most of the traditional benefits of molded grating products - high strength, corrosion resistance, fire retardancy, nonconductivity and low maintenance - this specially manufactured molded FRP product has been engineered to carry the forklift loads that traditional molded FRP grating products are unable to support.

With a 48% open surface area, Fibergrate's molded HLC grating is available in a 6' x 4' panel with depths of 1-1/2" and 2" and comes standard in a fire-retardant vinyl ester resin system, dark gray in color, with a smooth surface. Fibergrate's molded HLC grating merits an ASTM E-84 flame spread rating of 25 or less and a Class 1 Fire Rating.

Allowable Spans for Vehicular Loads

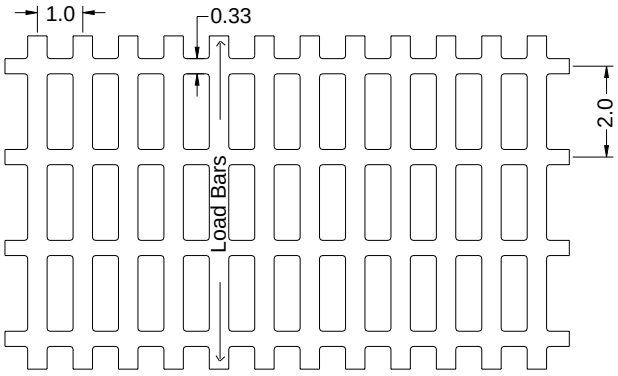
	Wheel Load (lb) (1/2 Axle Load +30% impact)	Load Distribution		Allowable Span[2,3]	
		Parallel To Axle[1]	Perpendicular To Axle	1-1/2" Deep HLC Molded Grating	2" Deep HLC Molded Grating
AASHTO Standard Truck[4] 32,000 lb Axle Load Dual Wheels ***(*formerly AASHTO H-20)***	20,800	20" + 4"	8"	1'-2"	1'-5"
Automobile Traffic 5,000 lb Vehicle 1,500 lb Load 55% Drive Axle Load	2,220	8" + 4"	8"	2'-2"	2'-8"
5 Ton Capacity Forklift 14,400 lb Vehicle 24,400 lb Total Load 85% Drive Axle Load	13,480	11" + 4"	11"	1'-1"	1'-5"
3 Ton Capacity Forklift 9,800 lb Vehicle 15,800 lb Total Load 85% Drive Axle Load	8,730	7" + 4"	7"	1'-0"	1'-4"
1 Ton Capacity Forklift 4,200 lb Vehicle 6,200 lb Total Load 85% Drive Axle Load	3,425	4" + 4"	4"	1'-7"	2'-1"

Notes:

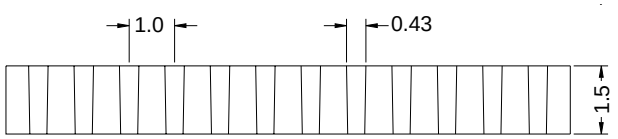
1. Load is carried by the grating load bars immediate under wheel + four additional load bars adjacent to wheel.
2. Allowable Span is based on a 0.25" maximum deflection and a Factor of Safety of 3.0. The other criteria may be required by certain construction codes. Check code requirements to determine design criteria.
3. **ALLOWABLE SPAN IS STRONGLY DEPENDENT ON WHEEL WIDTH AND VEHICLE WEIGHT/LOAD CAPACITY.** If your application varies from the values given on this table, contact Fibergrate Engineering for application assistance.
4. Load based on the AASHTO Standard Truck Load as defined in AASHTO LRFD Bridge Design Specifications, 2nd Ed. This does not imply that the allowable span meets the deflection requirements of this specification.

HLC Grating Details

1-1/2” Molded HLC Grating



Plan View

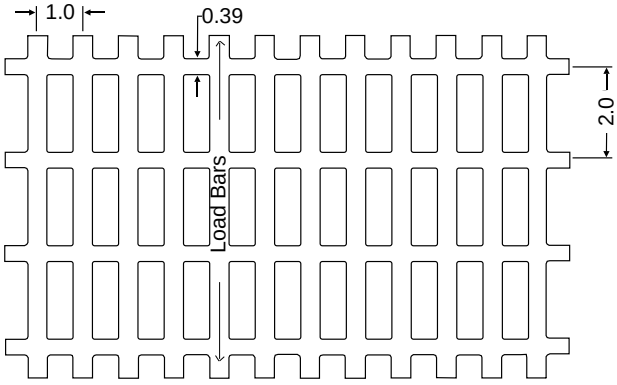


Elevation

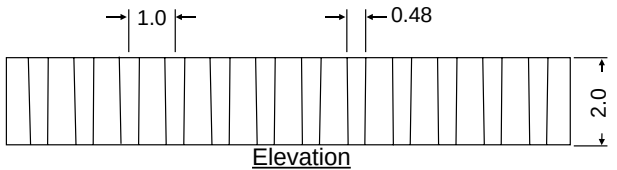
1 1/2” Deep x 1” x 2” Rectangular Mesh
# of Bars/Foot of Width = 12
Load Bar Width = 0.43” Load Bar Centers = 1”
Open Area = 48% Approx. Weight = 6.2 psf
Panel Size 6’ x 4’ (span)

Engineering Properties Per Ft of Width
A= 7.45 in^2 I = 1.39 in^4 S = 1.80 in^3
Average EI = 2,400,000 lb - in^2

2” Molded HLC Grating



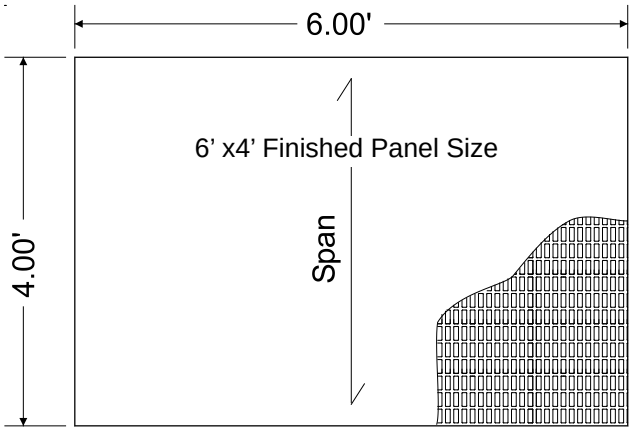
Plan View



Elevation

2” Deep x 1” x 2” Rectangular Mesh
# of Bars/Foot of Width = 12
Load Bar Width = 0.48” Load Bar Centers = 1”
Open Area = 48% Approx. Weight = 8.4 psf
Panel Size 6’ x 4’ (span)

Engineering Properties Per Ft of Width
A= 10.26 in^2 I = 3.40 in^4 S = 3.27 in^3
Average EI = 6,000,000 lb - in^2



Note:
Load carrying bars are oriented across the narrow (4’) dimension of the panel. Panels furnished with closed bars all sides.

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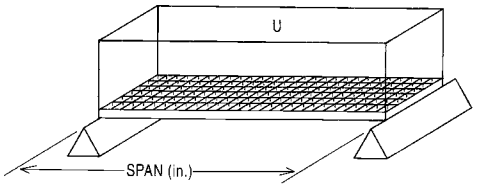
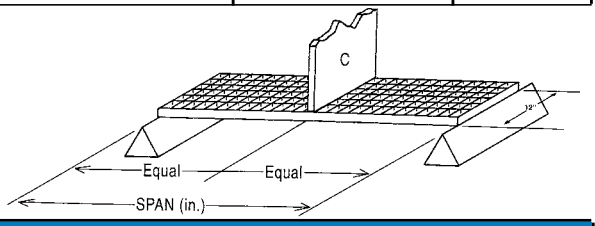
Load Tables - HLC Grating

Molded High Load Capacity Grating
Load/Deflection Information-



Uniform Load Table - Deflection in Inches

SPAN (in)	STYLE DEPTH (in)	STYLE MESH (in x in)	UNIFORM LOAD (psf) 100	200	300	400	500	600	700	800	900	1000	MAXIMUM RECOMMENDED LOAD (psf)	ULTIMATE CAPACITY (psf)
12	1-1/2	1 x 2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	28000	84000
	2	1 x 2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	31200	93600
18	1-1/2	1 x 2	<0.01	<0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	12400	37300
	2	1 x 2	<0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	14500	43500
24	1-1/2	1 x 2	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.10	0.11	6800	20400
	2	1 x 2	0.01	0.01	0.02	0.02	0.03	0.04	0.04	0.05	0.05	0.06	9000	27200
30	1-1/2	1 x 2	0.03	0.05	0.08	0.11	0.13	0.16	0.18	0.21	0.24	0.26	4300	13000
	2	1 x 2	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.11	0.13	0.14	5800	17400
36	1-1/2	1 x 2	0.05	0.10	0.16	0.21	0.26	0.31	0.37	0.42	0.47	--	3000	9000
	2	1 x 2	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27	0.30	4000	8800
42	1-1/2	1 x 2	0.10	0.19	0.29	0.39	0.48	--	--	--	--	--	2200	6600
	2	1 x 2	0.06	0.11	0.17	0.22	0.28	0.33	0.39	0.44	0.50	--	2900	8800



Concentrated Line Load Table - Deflection in Inches

SPAN (in)	STYLE DEPTH (in)	STYLE MESH (in x in)	LOAD (lb/ft of width) 100	200	300	500	1000	2000	3000	4000	5000	6000	MAXIMUM RECOMMENDED LOAD (lb/ft)	ULTIMATE CAPACITY (lb/ft)
12	1-1/2	1 x 2	<0.01	<0.01	<0.01	<0.01	0.01	0.03	0.04	0.06	0.07	0.08	14000	42000
	2	1 x 2	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.02	0.03	0.04	0.05	15600	46800
18	1-1/2	1 x 2	<0.01	<0.01	0.01	0.02	0.04	0.07	0.11	0.15	0.18	0.22	9300	28000
	2	1 x 2	<0.01	<0.01	0.01	0.01	0.02	0.04	0.06	0.08	0.11	0.13	10800	32600
24	1-1/2	1 x 2	<0.01	0.02	0.03	0.04	0.09	0.17	0.26	0.34	0.43	--	6800	20400
	2	1 x 2	<0.01	0.01	0.01	0.02	0.05	0.09	0.14	0.19	0.24	0.28	9000	27200
30	1-1/2	1 x 2	0.02	0.03	0.05	0.08	0.17	0.34	--	--	--	--	5400	16300
	2	1 x 2	0.01	0.02	0.03	0.05	0.09	0.18	0.28	0.37	0.46	--	7200	21700
36	1-1/2	1 x 2	0.03	0.06	0.08	0.14	0.28	--	--	--	--	--	4500	13600
	2	1 x 2	0.02	0.03	0.05	0.08	0.16	0.32	0.48	--	--	--	6000	18100
42	1-1/2	1 x 2	0.04	0.09	0.13	0.22	0.44						3800	11600
	2	1 x 2	0.03	0.05	0.08	0.13	0.25	0.50	--	--	--	--	5100	15500

NOTES:

1. ULTIMATE CAPACITY represents a complete and total failure of the grating. Values are provided to illustrate the reserve strength of the grating at a given span and are NOT to be used for design. Functionality of grating is limited to MAX RECOMMENDED LOAD.
2. The allowable loads in this table are for STATIC LOAD CONDITIONS at ambient temperatures only. Allowable loads for impact conditions should be a maximum of ONE-HALF the values shown. Long term loads will result in added deflection due to creep in the material and will also require higher safety factors to ensure acceptable performance. For applications at elevated temperatures, consult factory. The designer is further referenced to ASCE Structural Plastics Design Manual.
3. Fibergrate recommends a maximum deflection of 0.25" for this product under normal loading conditions. The use of L/500 may be required by certain construction codes. Check code requirements to determine design criteria.
4. All gratings were tested in accordance with the proposed standard of the Fiberglass Grating Manufacturers Council of the American Composites Manufacturers Association (ACMA).