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 - Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
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BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

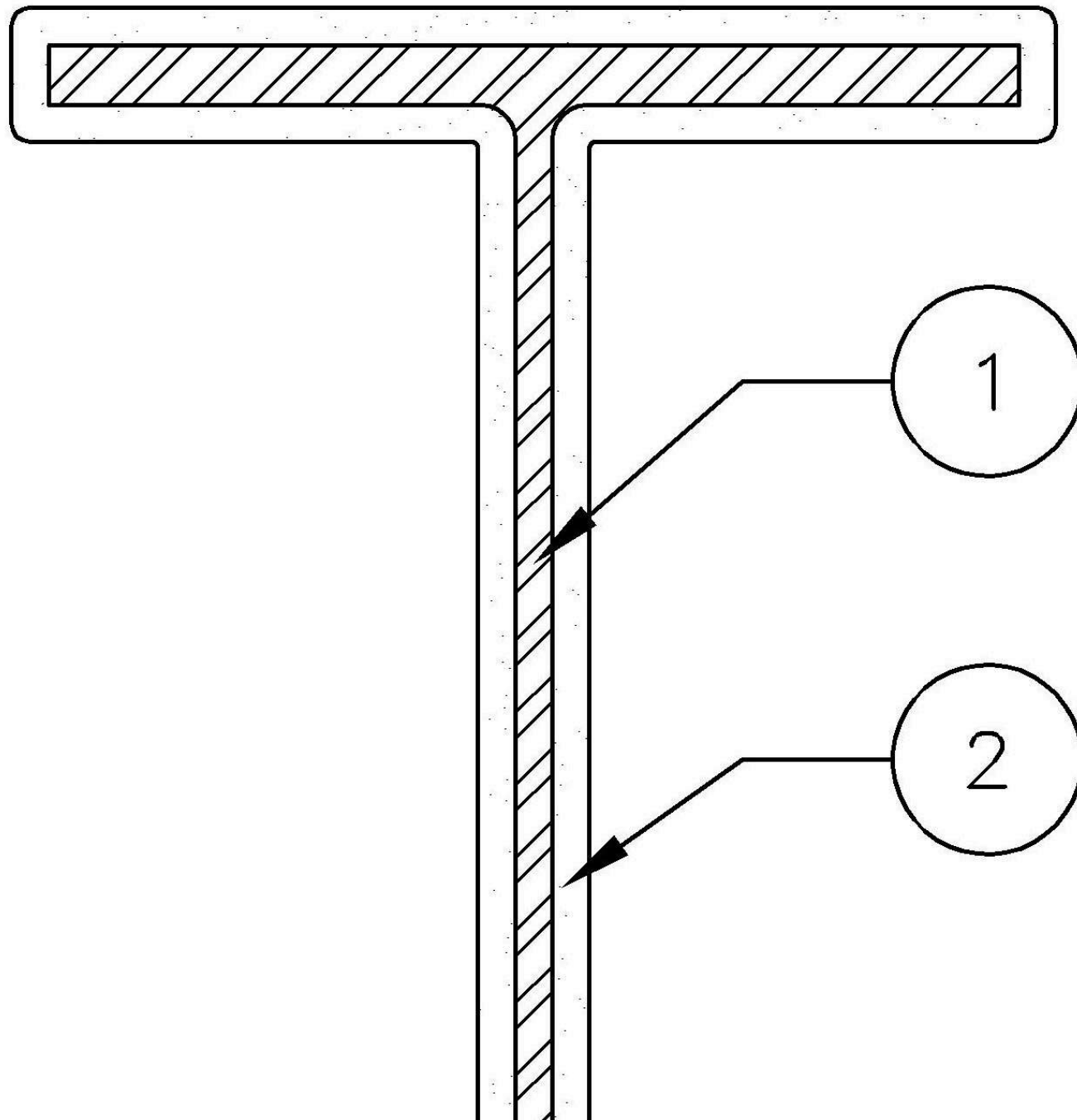
[See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States](#)
[Design Criteria and Allowable Variances](#)

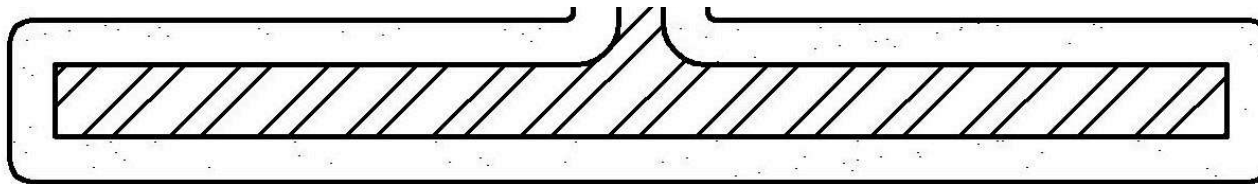
Design No. Y677

August 22, 2025

Ratings - 1/2, 3/4, 1, 1-1/2, 2, 2-1/2, 3 and 3-1/2 Hr. (See Item 2)

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**





1. **Steel Column** — Wide flange steel columns with the minimum sizes shown in the tables below.

2. **Mastic & Intumescent Coating*** — Coating spray or brush applied in accordance with the manufacturer's instructions at the minimum average dry thickness shown in the table below.

As an alternate to the table below, the required thickness of coating (in mm) to be applied to surfaces of Wide-Flange columns may be determined from the equations listed below. The equations may only be used for the indicated hourly rating, and for the corresponding listed ranges of thickness and Hp/A.

Hourly Rating	Thickness Equation (mm)	Thickness Range (mm)	Hp/A Section Factor Range
1	$T = ((0.0008 * Hp/A) + 3.5825)$	3.92 - 3.83	406 - 298
1	$T = ((0.0142 * Hp/A) - 0.4131)$	3.83 - 1.86	298 - 160
1	$T = ((0.0131 * Hp/A) - 0.225)$	1.86 - 0.47	160 - 53
2	$T = ((0.0283 * Hp/A) + 0.5201)$	8.94 - 2.02	298 - 53

Size	W/D	Required Thickness (inches)							
		Rating Period (hr)							
		1/2	3/4	1	1-1/2	2	2-1/2	3	3-1/2
W8x10	0.33	0.063	0.109	0.154	N/A	N/A	N/A	N/A	N/A
W6x9	0.34	0.061	0.107	0.153	N/A	N/A	N/A	N/A	N/A
W10x12	0.35	0.059	0.106	0.153	N/A	N/A	N/A	N/A	N/A
W12x14	0.36	0.058	0.106	0.153	N/A	N/A	N/A	N/A	N/A
W12x16	0.41	0.053	0.102	0.151	N/A	N/A	N/A	N/A	N/A

W8x13	0.42	0.052	0.102	0.151	N/A	N/A	N/A	N/A	N/A
W10x15	0.43	0.051	0.101	0.151	N/A	N/A	N/A	N/A	N/A
W6x15	0.43	0.051	0.101	0.151	N/A	N/A	N/A	N/A	N/A
W6x12	0.45	0.05	0.1	0.151	0.251	0.352	N/A	N/A	N/A
W10x17	0.48	0.049	0.092	0.140	0.235	0.332	N/A	N/A	N/A
W14x22	0.48	0.049	0.092	0.140	0.235	0.332	N/A	N/A	N/A
W8x15	0.48	0.049	0.092	0.140	0.235	0.332	N/A	N/A	N/A
W12x19	0.49	0.049	0.09	0.137	0.230	0.325	N/A	N/A	N/A
W16x26	0.5	0.049	0.088	0.134	0.226	0.319	N/A	N/A	N/A
W8x18	0.5	0.049	0.088	0.134	0.226	0.319	N/A	N/A	N/A
W10x22	0.52	0.048	0.084	0.128	0.217	0.308	N/A	N/A	N/A
W12x26	0.53	0.048	0.082	0.125	0.213	0.302	N/A	N/A	N/A
W10x19	0.54	0.048	0.08	0.122	0.209	0.297	N/A	N/A	N/A
W5x16	0.55	0.048	0.078	0.120	0.205	0.292	N/A	N/A	N/A
W12x22	0.56	0.048	0.076	0.118	0.201	0.287	N/A	N/A	N/A
W14x26	0.56	0.048	0.076	0.118	0.201	0.287	N/A	N/A	N/A
W14x30	0.56	0.048	0.076	0.118	0.201	0.287	N/A	N/A	N/A
W4x13	0.56	0.048	0.076	0.118	0.201	0.287	N/A	N/A	N/A
W6x20	0.56	0.048	0.076	0.118	0.201	0.287	N/A	N/A	N/A
W6x16	0.58	0.047	0.073	0.113	0.194	0.278	N/A	N/A	N/A
W8x21	0.58	0.047	0.073	0.113	0.194	0.278	N/A	N/A	N/A
W16x31	0.59	0.047	0.071	0.111	0.191	0.274	N/A	N/A	N/A
W8x24	0.59	0.047	0.071	0.111	0.191	0.274	N/A	N/A	N/A
W18x35	0.6	0.047	0.07	0.109	0.188	0.269	N/A	N/A	N/A

W10x26	0.61	0.047	0.068	0.107	0.184	0.265	N/A	N/A	N/A
W12x30	0.61	0.047	0.068	0.107	0.184	0.265	N/A	N/A	N/A
W16x36	0.62	0.047	0.067	0.105	0.181	0.261	N/A	N/A	N/A
W14x34	0.63	0.046	0.065	0.103	0.179	0.257	N/A	N/A	N/A
W5x19	0.64	0.046	0.064	0.101	0.176	0.254	N/A	N/A	N/A
W10x33	0.66	0.046	0.061	0.097	0.170	0.247	N/A	N/A	N/A
W21x44	0.67	0.046	0.06	0.096	0.168	0.243	N/A	N/A	N/A
W8x31	0.67	0.046	0.06	0.096	0.168	0.243	N/A	N/A	N/A
W16x40	0.69	0.046	0.058	0.092	0.163	0.237	N/A	N/A	N/A
W18x40	0.69	0.046	0.058	0.092	0.163	0.237	N/A	N/A	N/A
W8x28	0.69	0.046	0.058	0.092	0.163	0.237	N/A	N/A	N/A
W10x30	0.7	0.046	0.057	0.091	0.160	0.234	N/A	N/A	N/A
W12x35	0.7	0.046	0.057	0.091	0.160	0.234	N/A	N/A	N/A
W6x25	0.7	0.046	0.057	0.091	0.160	0.234	N/A	N/A	N/A
W14x38	0.71	0.045	0.056	0.089	0.158	0.231	N/A	N/A	N/A
W12x40	0.73	0.045	0.054	0.086	0.154	0.225	N/A	N/A	N/A
W14x43	0.75	0.045	0.052	0.084	0.149	0.220	N/A	N/A	N/A
W21x50	0.75	0.045	0.052	0.084	0.149	0.220	N/A	N/A	N/A
W24x55	0.75	0.045	0.052	0.084	0.149	0.220	N/A	N/A	N/A
W8x35	0.75	0.045	0.052	0.084	0.149	0.220	N/A	N/A	N/A
W16x45	0.77	0.045	0.05	0.081	0.145	0.214	N/A	N/A	N/A
W10x39	0.78	0.045	0.049	0.080	0.144	0.212	N/A	N/A	N/A
W18x50	0.78	0.045	0.049	0.080	0.144	0.212	N/A	N/A	N/A
W18x46	0.79	0.045	0.048	0.079	0.142	0.209	N/A	N/A	N/A

W12x45	0.83	0.044	0.045	0.074	0.135	0.200	N/A	N/A	N/A
W10x49	0.84	0.044	0.044	0.073	0.133	0.198	N/A	N/A	N/A
W14x48	0.84	0.044	0.044	0.073	0.133	0.198	N/A	N/A	N/A
W24x62	0.84	0.044	0.044	0.073	0.133	0.198	N/A	N/A	N/A
W24x68	0.84	0.044	0.044	0.073	0.133	0.198	N/A	N/A	N/A
W16x50	0.85	0.044	0.044	0.072	0.132	0.196	N/A	N/A	N/A
W18x55	0.85	0.044	0.044	0.072	0.132	0.196	N/A	N/A	N/A
W21x62	0.85	0.044	0.044	0.072	0.132	0.196	N/A	N/A	N/A
W8x40	0.85	0.044	0.044	0.072	0.132	0.196	N/A	N/A	N/A
W12x53	0.86	0.043	0.043	0.072	0.130	0.194	N/A	N/A	N/A
W21x57	0.86	0.043	0.043	0.072	0.130	0.194	N/A	N/A	N/A
W10x45	0.89	0.042	0.042	0.069	0.126	0.188	N/A	N/A	N/A
W12x50	0.91	0.041	0.041	0.067	0.123	0.185	N/A	N/A	N/A
W10x54	0.92	0.041	0.041	0.066	0.122	0.183	N/A	N/A	N/A
W14x53	0.92	0.041	0.041	0.066	0.122	0.183	N/A	N/A	N/A
W18x60	0.92	0.041	0.041	0.066	0.122	0.183	N/A	N/A	N/A
W27x84	0.92	0.041	0.041	0.066	0.122	0.183	N/A	N/A	N/A
W12x58	0.93	0.04	0.04	0.065	0.121	0.181	N/A	N/A	N/A
W12x65	0.93	0.04	0.04	0.065	0.121	0.181	N/A	N/A	N/A
W14x61	0.93	0.04	0.04	0.065	0.121	0.181	N/A	N/A	N/A
W21x68	0.93	0.04	0.04	0.065	0.121	0.181	N/A	N/A	N/A
W24x76	0.93	0.04	0.04	0.065	0.121	0.181	N/A	N/A	N/A
W16x67	0.94	0.04	0.04	0.065	0.119	0.179	N/A	N/A	N/A
W16x57	0.96	0.039	0.039	0.063	0.117	0.176	N/A	N/A	N/A

W18x76	0.97	0.039	0.039	0.062	0.116	0.174	N/A	N/A	N/A
W21x73	0.99	0.038	0.038	0.061	0.114	0.171	N/A	N/A	N/A
W18x65	1	0.038	0.038	0.060	0.113	0.170	N/A	N/A	N/A
W30x99	1	0.038	0.038	0.060	0.113	0.170	N/A	N/A	N/A
W8x48	1	0.038	0.038	0.060	0.113	0.170	N/A	N/A	N/A
W10x60	1.01	0.038	0.038	0.060	0.112	0.168	N/A	N/A	N/A
W12x72	1.02	0.037	0.037	0.059	0.111	0.167	N/A	N/A	N/A
W24x84	1.02	0.037	0.037	0.059	0.111	0.167	N/A	N/A	N/A
W27x94	1.03	0.037	0.037	0.058	0.109	0.165	N/A	N/A	N/A
W14x68	1.04	0.037	0.037	0.058	0.108	0.164	N/A	N/A	N/A
W16x77	1.07	0.036	0.036	0.056	0.106	0.160	N/A	N/A	N/A
W24x104	1.07	0.036	0.036	0.056	0.106	0.160	N/A	N/A	N/A
W14x90	1.08	0.036	0.036	0.055	0.105	0.159	N/A	N/A	N/A
W18x71	1.08	0.036	0.036	0.055	0.105	0.159	N/A	N/A	N/A
W33x118	1.08	0.036	0.036	0.055	0.105	0.159	N/A	N/A	N/A
W18x86	1.09	0.035	0.035	0.055	0.104	0.157	N/A	N/A	N/A
W30x108	1.09	0.035	0.035	0.055	0.104	0.157	N/A	N/A	N/A
W12x79	1.11	0.035	0.035	0.053	0.102	0.155	N/A	N/A	N/A
W27x102	1.11	0.035	0.035	0.053	0.102	0.155	N/A	N/A	N/A
W14x74	1.12	0.034	0.034	0.053	0.101	0.154	N/A	N/A	N/A
W21x83	1.12	0.034	0.034	0.053	0.101	0.154	N/A	N/A	N/A
W21x101	1.13	0.034	0.034	0.052	0.100	0.153	N/A	N/A	N/A
W24x94	1.14	0.034	0.034	0.052	0.099	0.151	N/A	N/A	N/A
W10x68	1.15	0.034	0.034	0.051	0.099	0.150	N/A	N/A	N/A

W36x135	1.15	0.034	0.034	0.051	0.099	0.150	N/A	N/A	N/A
W30x116	1.16	0.033	0.033	0.051	0.098	0.149	N/A	N/A	N/A
W14x99	1.18	0.033	0.033	0.050	0.096	0.147	N/A	N/A	N/A
W33x130	1.18	0.033	0.033	0.050	0.096	0.147	N/A	N/A	N/A
W24x117	1.2	0.033	0.033	0.049	0.095	0.145	N/A	N/A	N/A
W8x58	1.2	0.033	0.033	0.049	0.095	0.145	N/A	N/A	N/A
W12x87	1.22	0.032	0.032	0.048	0.093	0.143	N/A	N/A	N/A
W16x89	1.22	0.032	0.032	0.048	0.093	0.143	N/A	N/A	N/A
W18x97	1.22	0.032	0.032	0.048	0.093	0.143	N/A	N/A	N/A
W14x82	1.23	0.032	0.032	0.047	0.093	0.142	N/A	N/A	N/A
W27x114	1.23	0.032	0.032	0.047	0.093	0.142	N/A	N/A	N/A
W21x111	1.24	0.032	0.032	0.047	0.092	0.141	N/A	N/A	N/A
W21x93	1.24	0.032	0.032	0.047	0.092	0.141	N/A	N/A	N/A
W30x124	1.24	0.032	0.032	0.047	0.092	0.141	N/A	N/A	N/A
W10x77	1.28	0.031	0.031	0.045	0.089	0.137	N/A	N/A	N/A
W33x141	1.28	0.031	0.031	0.045	0.089	0.137	N/A	N/A	N/A
W36x150	1.28	0.031	0.031	0.045	0.089	0.137	N/A	N/A	N/A
W14x109	1.29	0.031	0.031	0.045	0.089	0.136	N/A	N/A	N/A
W30x132	1.32	0.03	0.03	0.043	0.087	0.134	N/A	N/A	N/A
W18x106	1.33	0.03	0.03	0.043	0.086	0.133	N/A	N/A	N/A
W24x131	1.33	0.03	0.03	0.043	0.086	0.133	N/A	N/A	N/A
W12x96	1.34	0.03	0.03	0.043	0.085	0.132	N/A	N/A	N/A
W21x122	1.35	0.03	0.03	0.042	0.085	0.131	N/A	N/A	N/A
W27x146	1.35	0.03	0.03	0.042	0.085	0.131	N/A	N/A	N/A

W36x160	1.36	0.029	0.029	0.042	0.084	0.130	N/A	N/A	N/A
W16x100	1.37	0.029	0.029	0.042	0.084	0.129	N/A	N/A	N/A
W33x152	1.37	0.029	0.029	0.042	0.084	0.129	N/A	N/A	N/A
W8x67	1.37	0.029	0.029	0.042	0.084	0.129	N/A	N/A	N/A
W14x120	1.42	0.028	0.028	0.040	0.081	0.126	N/A	N/A	N/A
W36x170	1.44	0.028	0.028	0.039	0.080	0.124	N/A	N/A	N/A
W10x88	1.45	0.028	0.028	0.039	0.079	0.123	N/A	N/A	N/A
W21x132	1.45	0.028	0.028	0.039	0.079	0.123	N/A	N/A	N/A
W30x173	1.45	0.028	0.028	0.039	0.079	0.123	N/A	N/A	N/A
W12x106	1.47	0.028	0.028	0.038	0.078	0.122	N/A	N/A	N/A
W18x119	1.48	0.027	0.027	0.038	0.078	0.121	N/A	N/A	N/A
W24x146	1.48	0.027	0.027	0.038	0.078	0.121	N/A	N/A	N/A
W27x161	1.48	0.027	0.027	0.038	0.078	0.121	N/A	N/A	N/A
W36x182	1.53	0.027	0.027	0.036	0.076	0.118	N/A	N/A	N/A
W14x132	1.56	0.026	0.026	0.035	0.074	0.116	N/A	N/A	N/A
W33x201	1.58	0.026	0.026	0.035	0.073	0.115	N/A	N/A	N/A
W21x147	1.61	0.026	0.026	0.034	0.072	0.113	N/A	N/A	N/A
W30x191	1.62	0.026	0.026	0.034	0.072	0.113	N/A	N/A	N/A
W24x162	1.63	0.025	0.025	0.034	0.071	0.112	N/A	N/A	N/A
W27x178	1.63	0.025	0.025	0.034	0.071	0.112	N/A	N/A	N/A
W36x194	1.63	0.025	0.025	0.034	0.071	0.112	N/A	N/A	N/A
W10x100	1.64	0.025	0.025	0.033	0.071	0.112	N/A	N/A	N/A
W14x145	1.64	0.025	0.025	0.033	0.071	0.112	N/A	N/A	N/A
W12x120	1.65	0.025	0.025	0.033	0.070	0.111	N/A	N/A	N/A

W36x230	1.72	0.024	0.024	0.031	0.068	0.107	N/A	N/A	N/A
W33x221	1.73	0.024	0.024	0.031	0.067	0.107	N/A	N/A	N/A
W30x211	1.76	0.024	0.024	0.030	0.066	0.105	N/A	N/A	N/A
W36x210	1.76	0.024	0.024	0.030	0.066	0.105	N/A	N/A	N/A
W14x159	1.78	0.024	0.024	0.030	0.066	0.104	N/A	N/A	N/A
W10x112	1.81	0.023	0.023	0.029	0.065	0.103	N/A	N/A	N/A
W36x245	1.81	0.023	0.023	0.029	0.065	0.103	N/A	N/A	N/A
W12x136	1.86	0.023	0.023	0.028	0.063	0.101	N/A	N/A	N/A
W33x241	1.87	0.023	0.023	0.028	0.063	0.100	N/A	N/A	N/A
W36x260	1.93	0.022	0.022	0.027	0.061	0.098	N/A	N/A	N/A
W14x176	1.96	0.022	0.022	0.026	0.060	0.097	N/A	N/A	N/A
W12x152	2.04	0.021	0.021	0.025	0.058	0.094	N/A	N/A	N/A
W36x280	2.06	0.021	0.021	0.025	0.057	0.093	N/A	N/A	N/A
W14x193	2.14	0.021	0.021	0.023	0.056	0.090	N/A	N/A	N/A
W36x300	2.21	0.02	0.02	0.022	0.054	0.088	N/A	N/A	N/A
W12x170	2.26	0.02	0.02	0.022	0.053	0.087	N/A	N/A	N/A
W14x211	2.32	0.02	0.02	0.021	0.052	0.085	N/A	N/A	N/A
W12x190	2.5	0.019	0.019	0.019	0.048	0.080	N/A	N/A	N/A
W14x233	2.55	0.018	0.018	0.019	0.048	0.080	0.111	0.143	0.175

Hp/A	Required Thickness (mm)								
	Rating Period (hr)								
	1/2	3/4	1	1-1/2	2	2-1/2	3	3-1/2	

406	1.6	2.76	3.92	N/A	N/A	N/A	N/A	N/A
400	1.56	2.73	3.9	N/A	N/A	N/A	N/A	N/A
395	1.55	2.72	3.9	N/A	N/A	N/A	N/A	N/A
390	1.53	2.71	3.89	N/A	N/A	N/A	N/A	N/A
385	1.52	2.7	3.89	N/A	N/A	N/A	N/A	N/A
380	1.5	2.69	3.89	N/A	N/A	N/A	N/A	N/A
375	1.49	2.69	3.88	N/A	N/A	N/A	N/A	N/A
370	1.47	2.68	3.88	N/A	N/A	N/A	N/A	N/A
365	1.46	2.67	3.87	N/A	N/A	N/A	N/A	N/A
360	1.44	2.66	3.87	N/A	N/A	N/A	N/A	N/A
355	1.43	2.65	3.87	N/A	N/A	N/A	N/A	N/A
350	1.41	2.64	3.86	N/A	N/A	N/A	N/A	N/A
345	1.4	2.63	3.86	N/A	N/A	N/A	N/A	N/A
340	1.38	2.62	3.85	N/A	N/A	N/A	N/A	N/A
335	1.37	2.61	3.85	N/A	N/A	N/A	N/A	N/A
330	1.35	2.6	3.85	N/A	N/A	N/A	N/A	N/A
325	1.34	2.59	3.84	N/A	N/A	N/A	N/A	N/A
320	1.32	2.58	3.84	N/A	N/A	N/A	N/A	N/A
315	1.31	2.57	3.83	N/A	N/A	N/A	N/A	N/A
310	1.29	2.56	3.83	N/A	N/A	N/A	N/A	N/A
305	1.28	2.55	3.83	N/A	N/A	N/A	N/A	N/A
300	1.28	2.55	3.82	N/A	N/A	N/A	N/A	N/A
295	1.27	2.51	3.78	6.32	8.87	N/A	N/A	N/A
290	1.27	2.46	3.7	6.21	8.73	N/A	N/A	N/A

285	1.26	2.41	3.63	6.10	8.59	N/A	N/A	N/A
280	1.25	2.35	3.56	5.99	8.44	N/A	N/A	N/A
275	1.25	2.3	3.49	5.89	8.30	N/A	N/A	N/A
270	1.24	2.25	3.42	5.78	8.16	N/A	N/A	N/A
265	1.24	2.2	3.35	5.67	8.02	N/A	N/A	N/A
260	1.23	2.15	3.28	5.56	7.88	N/A	N/A	N/A
255	1.23	2.1	3.21	5.45	7.74	N/A	N/A	N/A
250	1.22	2.05	3.14	5.34	7.60	N/A	N/A	N/A
245	1.22	1.99	3.07	5.24	7.45	N/A	N/A	N/A
240	1.21	1.94	2.99	5.13	7.31	N/A	N/A	N/A
235	1.21	1.89	2.92	5.02	7.17	N/A	N/A	N/A
230	1.2	1.84	2.85	4.91	7.03	N/A	N/A	N/A
225	1.19	1.79	2.78	4.80	6.89	N/A	N/A	N/A
220	1.19	1.74	2.71	4.69	6.75	N/A	N/A	N/A
215	1.18	1.68	2.64	4.58	6.60	N/A	N/A	N/A
210	1.18	1.63	2.57	4.48	6.46	N/A	N/A	N/A
205	1.17	1.58	2.5	4.37	6.32	N/A	N/A	N/A
200	1.17	1.53	2.43	4.26	6.18	N/A	N/A	N/A
195	1.16	1.48	2.36	4.15	6.04	N/A	N/A	N/A
190	1.16	1.43	2.28	4.04	5.90	N/A	N/A	N/A
185	1.15	1.38	2.21	3.93	5.76	N/A	N/A	N/A
180	1.14	1.32	2.14	3.82	5.61	N/A	N/A	N/A
175	1.14	1.27	2.07	3.72	5.47	N/A	N/A	N/A
170	1.13	1.22	2	3.61	5.33	N/A	N/A	N/A

165	1.13	1.17	1.93	3.50	5.19	N/A	N/A	N/A
160	1.12	1.12	1.86	3.38	5.04	N/A	N/A	N/A
155	1.09	1.09	1.81	3.29	4.91	N/A	N/A	N/A
150	1.06	1.06	1.74	3.19	4.77	N/A	N/A	N/A
145	1.03	1.03	1.67	3.08	4.62	N/A	N/A	N/A
140	1	1	1.61	2.98	4.48	N/A	N/A	N/A
135	0.97	0.97	1.54	2.88	4.34	N/A	N/A	N/A
130	0.94	0.94	1.48	2.78	4.20	N/A	N/A	N/A
125	0.91	0.91	1.41	2.68	4.06	N/A	N/A	N/A
120	0.88	0.88	1.35	2.58	3.92	N/A	N/A	N/A
115	0.85	0.85	1.28	2.47	3.77	N/A	N/A	N/A
110	0.82	0.82	1.22	2.37	3.63	N/A	N/A	N/A
105	0.79	0.79	1.15	2.27	3.49	N/A	N/A	N/A
100	0.76	0.76	1.09	2.17	3.35	N/A	N/A	N/A
95	0.72	0.72	1.02	2.07	3.21	N/A	N/A	N/A
90	0.69	0.69	0.95	1.97	3.07	N/A	N/A	N/A
85	0.66	0.66	0.89	1.87	2.93	N/A	N/A	N/A
80	0.63	0.63	0.82	1.76	2.78	N/A	N/A	N/A
75	0.6	0.6	0.76	1.66	2.64	N/A	N/A	N/A
70	0.57	0.57	0.69	1.56	2.50	N/A	N/A	N/A
65	0.54	0.54	0.63	1.46	2.36	N/A	N/A	N/A
60	0.51	0.51	0.56	1.36	2.22	N/A	N/A	N/A
55	0.48	0.48	0.5	1.26	2.08	N/A	N/A	N/A
53	0.47	0.47	0.47	1.22	2.02	2.83	3.63	4.44

CARBOLINE GLOBAL INC — Thermo-Sorb HB, INVESTIGATED FOR INTERIOR GENERAL PURPOSE, INTERIOR CONDITIONED SPACE and EXTERIOR ENVIRONMENTAL

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