

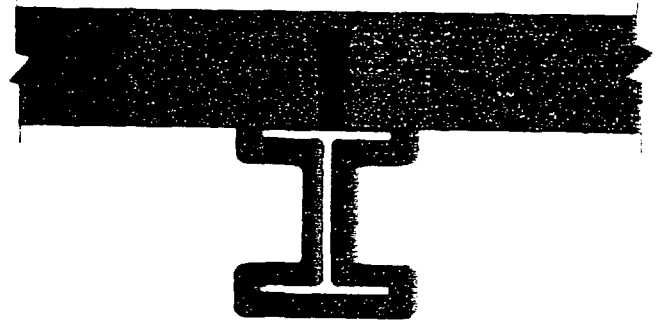
04503128

Blumberg No. 5113

PLAINTIFF'S
EXHIBIT

WIRE-85

Monokote[®]
Fireproofing
Estimating
Guide



I. Introduction

This manual contains reference data required for estimating in-place quantities of Monokote® cementitious fireproofing. In providing the market with the quality fire protection offered by Monokote, we depend on your ability to properly bid Monokote, to bid competitively, and to make a profit for your company. This manual is designed to provide you with a comprehensive reference to assist you in this area.

Included are Monokote use factors for floor deck, beams and columns based upon the latest information from Underwriters Laboratories fire resistive designs, deck manufacturers' catalogs and steel industry manuals.

II. Estimate Preparation

The data presented in this manual is not intended to replace careful preparation of your fireproofing estimate but only to provide direction in its preparation. It is important to remember that the conditions of each job are different and that these should be taken into account when estimating. The following is a partial check list for use in preparing your estimate:

- Have a complete copy of the job specifications, plus addenda.
- Have a complete set of plans for review — these should include architectural, structural-mechanical and electrical drawings.
- Require clarification from the architect/engineer/specifier on interpretations of drawings, specifications, codes and building regulations.
- Make sure that your application of Monokote can be accomplished within the specified time using normal installation techniques and equipment. The Monokote "Job Equipment and High Production Procedures" (MK-152) manual is published to assist you in this area.

- Consult the latest Monokote literature for technical data.
- Make sure to contact your local Zonolite field representative to assist you in selecting the most economical fireproofing thicknesses and to provide current literature, test data, certificates, etc. often required to be submitted with your bid.

For our part, we will continue to provide you and the fireproofing industry with:

- A consistent, high quality sprayed plaster fireproofing,
- A continued emphasis on the importance of quality fireproofing, and
- Continued support and technical assistance.

III. Estimating Steel Decks

When estimating fireproofing requirements for steel deck, great care should be taken in determining the following information from the plans and specifications:

1. The UL design reference, or at least the hourly requirements for the floor or roof construction being protected.
2. The type and thickness of concrete, as this may affect the fireproofing thicknesses.
3. The type, profile and depth of steel floor units. The blending of cellular and fluted deck significantly affects fireproofing requirements and should be noted where both deck types are being used.
4. The type of in-floor electrification which may be used as part of the floor system. This will require determining the number, width and length of trench headers and the possible use of electrical inserts. **NOTE:** All in-floor electrical components require increased fireproofing requirements — consult the UL

Directory or your Zonolite representative for information on proper protection of these areas.

5. The type of roof insulation and its thickness can affect the quantity of fireproofing required.

IV. Estimating Beams/Columns

As in estimating steel deck areas, there are key rules to follow in preparing an accurate fireproofing take-off for beams and columns:

1. Verify the hourly requirements for beams and columns from the plans and specs.
2. Keep in mind that some codes or specifications often require different ratings for **primary beams** and **secondary beams**.
3. Determine fireproofing thicknesses where these are not given from appropriate UL beam (N series) or column (X series) designs in the UL Directory or from local product code approvals such as ICBO #1578.
4. Separate columns into size categories. Ratings for columns are generally established for small columns (W6X16 or W8X28), intermediate columns (W10X49 and up) and large columns (W14X228 or larger). Fireproofing thicknesses are greatly influenced by size — that is, small columns require much more fireproofing than large columns for the same rating.
5. In preparing estimates for beams supporting metal floor to roof deck, care should be taken to estimate the amount of fireproofing material required to fill the flutes above the beam. Deeper deck sections with wide flute areas can take up to 1.5 board feet of material per lineal foot of beam (based on a 12 inch flange width).
6. Certain building areas require constructions to be classified for fireproofing considerations

as *unrestrained*, while others will allow for restrained classifications. It is the responsibility of the structural engineer to make the determination of restrained/unrestrained if there is any question as to classification.

7. New UL approvals provide the option of reducing thicknesses at the flange tips of certain beam and column designs. By increasing the thickness on the other surfaces, flange tip thickness may be cut in half. This may result in a cost savings by reducing material waste and increasing the efficiency of application labor. Pages 16-25 provide use factors for beams and columns using this option. Consult your local Zonolite Sales Representative for additional information on this subject.

V. Estimating Bar Joists

1. New Underwriters Laboratories fire test ratings have been added for Monokote application to open-web steel bar joists. These joists are used as substitutes for the more common wide flange structural beams.
2. Two alternate methods for applying Monokote are acceptable to Underwriters Laboratories. These are: (1) direct fireproofing application to encase each chord and web member, or (2) application to metal lath fastened to the joists encasing the member in a Monokote envelope.
3. Your steel joist estimate should follow the same format as a beam or column take-off.
4. Determine the hourly rating required by the plans and specifications. Separate the joist into length, size (depth) and hourly rating to determine the lineal footage and fireproofing thickness required.

NOTE:

- a. The joist depth will determine whether the addition of metal lath is more practical to minimize waste. When following the joist contour, a 20% waste factor can be expected. With the addition of metal lath, overspray is significantly reduced, hence waste factors of 10% are typical.
- b. Minimum Underwriters Laboratories Inc. thicknesses are required on all sides of the joist.
5. Contact your local Zonolite field representative for further information on this subject.

*Deck Type and Typical
Manufacturers' Designations*

2 120240

04503131

Type I

Airtherm Type B2C and B3C
ASC Type B Hi-Form
Bowman 1 1/2" V-Grip
Epic EC150 and ECB150
H. H. Robertson QL-3
INRYCO Type B
Mac-Fab B2C and B3C
Roll Form Lock-Form Type BP1 1/2 and Type B
Verco Type B Formlok
Wheeling Super-Bond BC, BWC

Type II

Bowman 2" V-Grip
Epic EC266
Granco Comdex 2
H. H. Robertson 2" QL-99
INRYCO Type 2" V
Mac-Fab MAC-LOK 2
Roll Form Lock-Form Type BP2
Verco Type W-2 Formlok

Type III

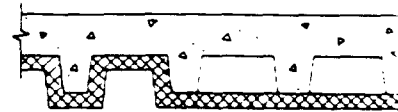
Airtherm Type NC
ASC Type N Hi-Form
Bowman 3" V-Grip
Epic EC300
H. H. Robertson QL-21
INRYCO Type N
Mac-Fab NC
Roll Form Lock-Form Type BP3
Verco Type N Formlok

Type IV

ASC Type 3W Hi-Form
Epic EC366
Granco Comdex 3
H. H. Robertson 3" QL-99
INRYCO Type 3" W Type 3" V
Roll Form Lock-Form Type BP2C3
Verco Type W-3K Formlok

Type V

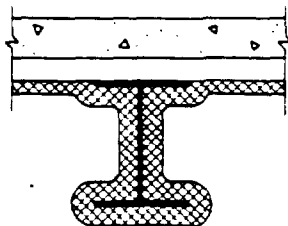
Airtherm B2FC Type NFC
ASC Type BF, NF & WF Cellular Deck
Bowman 1 1/2, 2 and 3" A-Roway
Epic ECP150, ECP266, ECP366, ECP300
H. H. Robertson QL-UX, QL-NKX, QL-TKX, QL-AXX,
QL-AKX
INRYCO Type NF, BF
Mac-Fab B2FC, NFC
Roll Form Lock-Form Type RFC1 1/2, RFC2, RFC3, RF103
Verco Type BCD, NCD, WCD



Depth	Deck Profile & Dimensions	Bd. Ft. of Monokote/Sq. Ft. of Deck Area Monokote Thickness (inches)				
		3/8"	1/2"	5/8"	3/4"	1"
1-1/2"	Type I 	.55	.73	.91	1.09	1.46
2"	Type II 	.46	.61	.76	.91	1.21
3"	Type III 	.65	.86	1.07	1.29	1.72
3"	Type IV 	.50	.67	.83	1.00	1.33
1-1/2, 2 & 3"	Type V 	.38	.50	.63	.75	1.00

To obtain the number of board feet of MONOKOTE at the indicated thickness, multiply the factors by the square foot of floor area for each of the above sections. These factors can be interchanged with any deck profile having the same ratio of steel surface area to square foot of deck area. The values given for 1" thickness reflect that ratio.

The U.L. Fire Resistance Directory states that "Cavities between the upper beam flange and the floor units, if any, shall be filled with the protective material. When deck profiles were shallow the volume to fill these flutes was relatively small. New decks (2" & 3" deep) having 5" to 9" wide cells require significant amounts of material to fill the flutes. This extra amount of material must be calculated and added to the bid."



IMPORTANT Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities for columns by that amount. This deduction is applicable only when the side angle of the beam is flat, that is, 100% bevel.

The U.L. Fire Resistance Directory states that "Gaps between the upper beam flange and the floor joists, if any, shall be filled with the protective material." When deck boards were shallow, the volume to fill these flutes was relatively small. New decks 2, 3 & 7 deep having 5 to 9" wide cels require significant amounts of material to fill the flutes. This extra amount of material must be calculated and added to the bid.

04503133

Beams and Girders: W Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	7/16	1/2	3/4	7/8	1	1-1/8	1-1/4	1-1/2	1-5/8	2
W 36X300	W 920X446	4.46	5.10	7.69	8.99	10.29	11.60	12.92	15.56	16.90	20.92
280	417	4.44	5.08	7.66	8.95	10.25	11.56	12.87	15.50	16.83	20.84
260	387	4.42	5.06	7.62	8.91	10.20	11.50	12.81	15.43	16.75	20.74
245	365	4.41	5.04	7.60	8.88	10.17	11.47	12.77	15.38	16.70	20.68
230	342	4.39	5.03	7.57	8.85	10.14	11.43	12.72	15.33	16.64	20.61
210	313	3.98	4.55	6.86	8.02	9.19	10.36	11.54	13.91	15.10	18.71
194	289	3.96	4.53	6.83	7.99	9.15	10.31	11.49	13.85	15.03	18.63
182	271	3.95	4.52	6.81	7.96	9.12	10.28	11.45	13.80	14.98	18.57
170	253	3.93	4.50	6.78	7.93	9.09	10.25	11.41	13.76	14.94	18.51
160	238	3.92	4.49	6.76	7.91	9.06	10.21	11.37	13.71	14.89	18.45
150	223	3.91	4.47	6.74	7.88	9.03	10.18	11.34	13.67	14.84	18.39
135	201	3.89	4.45	6.70	7.84	8.98	10.12	11.27	13.59	14.76	18.29
W 33X241	W 840X359	4.20	4.80	7.24	8.46	9.69	10.92	12.16	14.66	15.92	19.71
221	329	4.18	4.78	7.20	8.42	9.64	10.87	12.11	14.59	15.84	19.62
201	299	4.16	4.76	7.17	8.38	9.60	10.82	12.05	14.52	15.76	19.53
152	226	3.69	4.23	6.37	7.45	8.54	9.63	10.72	12.93	14.04	17.40
141	210	3.68	4.21	6.34	7.42	8.50	9.59	10.68	12.88	13.98	17.34
130	193	3.66	4.19	6.32	7.39	8.46	9.55	10.63	12.82	13.92	17.25
118	176	3.64	4.17	6.29	7.35	8.42	9.50	10.58	12.76	13.86	17.13
W 30X211	W 760X314	3.88	4.44	6.70	7.83	8.97	10.12	11.27	13.58	14.75	18.27
191	284	3.86	4.42	6.66	7.79	8.92	10.06	11.20	13.51	14.67	18.18
173	257	3.84	4.40	6.63	7.75	8.88	10.01	11.15	13.44	14.59	18.09
132	196	3.35	3.83	5.78	6.76	7.75	8.74	9.74	11.75	12.77	15.94
124	185	3.34	3.82	5.76	6.74	7.73	8.72	9.71	11.71	12.72	15.79
116	173	3.33	3.81	5.74	6.72	7.70	8.68	9.67	11.67	12.68	15.73
108	161	3.31	3.79	5.72	6.69	7.67	8.65	9.64	11.62	12.63	15.67
99	147	3.30	3.78	5.69	6.66	7.63	8.61	9.59	11.58	12.57	15.61
W 27X178	W 690X265	3.55	4.06	6.12	7.16	8.20	9.25	10.30	12.43	13.50	16.71
161	240	3.53	4.04	6.09	7.12	8.16	9.20	10.25	12.37	13.43	16.62
146	217	3.51	4.02	6.06	7.09	8.12	9.16	10.20	12.31	13.36	16.53
114	170	3.08	3.53	5.32	6.23	7.14	8.05	8.97	10.83	11.77	14.71
102	152	3.06	3.51	5.29	6.19	7.10	8.01	8.92	10.77	11.70	14.62
94	140	3.05	3.49	5.27	6.17	7.07	7.97	8.89	10.73	11.65	14.53
84	125	3.03	3.47	5.24	6.13	7.03	7.93	8.84	10.67	11.59	14.44
W 24X162	W 610X241	3.22	3.69	5.56	6.50	7.45	8.41	9.37	11.31	12.28	15.21
146	217	3.20	3.66	5.52	6.46	7.41	8.36	9.31	11.23	12.21	15.12
131	195	3.18	3.63	5.48	6.41	7.35	8.29	9.24	11.15	12.12	15.03
117	174	3.16	3.62	5.46	6.39	7.32	8.26	9.20	11.10	12.06	14.94
104	155	3.14	3.60	5.43	6.35	7.28	8.21	9.15	11.05	12.00	14.85
94	140	2.76	3.16	4.76	5.58	6.39	7.22	8.04	9.72	10.55	13.27
84	125	2.74	3.14	4.74	5.54	6.36	7.18	8.00	9.66	10.50	13.18
76	113	2.73	3.12	4.71	5.52	6.32	7.14	7.96	9.61	10.45	13.09
68	101	2.71	3.10	4.69	5.48	6.29	7.10	7.91	9.56	10.39	13.00
62	92	2.50	2.86	4.33	5.07	5.81	6.56	7.32	8.84	9.61	12.41
55	82	2.49	2.85	4.30	5.04	5.78	6.52	7.27	8.79	9.55	12.32
W 21X147	W 530X219	2.96	3.38	5.11	5.98	6.85	7.73	8.62	10.40	11.30	14.01
132	196	2.94	3.36	5.07	5.94	6.81	7.68	8.56	10.34	11.23	13.92
122	182	2.92	3.35	5.05	5.91	6.78	7.65	8.52	10.29	11.18	13.83
111	165	2.91	3.33	5.03	5.88	6.75	7.61	8.48	10.24	11.13	13.74
101	150	2.90	3.32	5.01	5.86	6.72	7.58	8.45	10.20	11.08	13.65
93	138	2.49	2.85	4.30	5.04	5.78	6.52	7.27	8.79	9.56	12.32
83	123	2.47	2.83	4.27	5.01	5.74	6.48	7.23	8.74	9.50	12.23
73	109	2.45	2.81	4.25	4.97	5.70	6.44	7.18	8.68	9.44	12.14
68	101	2.45	2.80	4.23	4.96	5.68	6.42	7.16	8.65	9.41	12.05

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities for columns by that amount. This deduction is applicable only when the slab above the beam is flat (that is, 100% cellular).

The U.L. Fire Resistance Directory states that: "Cavities between the upper beam flange and the floor units, if any, shall be filled with the protective material." When deck profiles were shallow, the volume to fill these flutes was relatively small. New decks (2" & 3" deep) having 5" to 9" wide cells require significant amounts of material to fill the flutes. This extra amount of material must be calculated and added to the bid.

04503134

Beams and Girders: W Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	7/16	1/2	3/4	7/8	1	1-1/8	1-1/4	1-1/2	1-5/8	2
W 21X 62	W 530X 92	2.43	2.79	4.21	4.93	5.66	6.39	7.12	8.61	9.36	11.65
57	85	2.25	2.58	3.90	4.57	5.25	5.93	6.61	8.00	8.70	10.83
50	74	2.24	2.56	3.87	4.54	5.21	5.88	6.56	7.94	8.63	10.75
44	66	2.22	2.55	3.85	4.51	5.18	5.85	6.52	7.89	8.58	10.69
W 18X119	W 460X177	2.60	2.98	4.50	5.26	6.04	6.81	7.60	9.18	9.98	12.40
106	158	2.58	2.95	4.46	5.22	5.99	6.76	7.54	9.11	9.90	12.31
97	144	2.57	2.94	4.44	5.20	5.96	6.73	7.50	9.07	9.86	12.26
86	128	2.55	2.92	4.41	5.17	5.92	6.69	7.46	9.01	9.80	12.18
76	113	2.54	2.90	4.39	5.14	5.89	6.65	7.41	8.96	9.74	12.11
71	106	2.18	2.49	3.77	4.42	5.07	5.73	6.39	7.73	8.41	10.48
65	97	2.17	2.48	3.75	4.40	5.05	5.70	6.36	7.70	8.37	10.43
60	89	2.16	2.47	3.74	4.38	5.03	5.68	6.34	7.67	8.34	10.39
55	82	2.15	2.46	3.72	4.36	5.00	5.65	6.31	7.63	8.30	10.34
50	74	2.14	2.45	3.71	4.34	4.98	5.63	6.28	7.60	8.27	10.30
46	68	1.99	2.27	3.44	4.03	4.63	5.23	5.84	7.07	7.70	9.60
40	60	1.97	2.26	3.42	4.01	4.60	5.20	5.80	7.03	7.65	9.54
35	52	1.96	2.24	3.40	3.98	4.57	5.16	5.76	6.98	7.59	9.47
W 16X100	W 410X149	2.37	2.71	4.10	4.80	5.50	6.22	6.93	8.38	9.11	11.34
89	132	2.35	2.69	4.07	4.76	5.46	6.17	6.88	8.32	9.05	11.26
77	114	2.33	2.67	4.03	4.72	5.42	6.12	6.82	8.25	8.97	11.17
67	100	2.31	2.65	4.00	4.69	5.38	6.08	6.78	8.20	8.91	11.10
57	85	1.98	2.27	3.43	4.02	4.61	5.21	5.82	7.05	7.67	9.56
50	74	1.96	2.25	3.40	3.99	4.58	5.18	5.78	6.99	7.61	9.49
45	67	1.95	2.24	3.39	3.97	4.56	5.15	5.75	6.96	7.57	9.44
40	60	1.94	2.22	3.37	3.95	4.53	5.12	5.72	6.92	7.53	9.40
36	54	1.93	2.21	3.35	3.92	4.51	5.09	5.69	6.88	7.49	9.35
31	46	1.77	2.03	3.08	3.61	4.14	4.68	5.23	6.34	6.90	8.62
26	39	1.76	2.01	3.05	3.58	4.11	4.65	5.19	6.29	6.85	8.55
W 14X730	W 360X1086	3.40	3.89	5.87	6.87	7.87	8.87	9.89	11.93	12.95	16.07
665	990	3.34	3.82	5.76	6.74	7.72	8.71	9.70	11.70	12.71	15.77
605	900	3.27	3.75	5.65	6.61	7.58	8.55	9.52	11.49	12.48	15.49
550	818	3.22	3.68	5.55	6.50	7.45	8.40	9.36	11.30	12.27	15.23
500	744	3.16	3.62	5.46	6.39	7.33	8.26	9.21	11.11	12.07	14.98
455	677	3.12	3.57	5.38	6.29	7.21	8.14	9.07	10.95	11.89	14.76
426	634	3.08	3.53	5.33	6.23	7.14	8.06	8.98	10.84	11.78	14.62
398	592	3.05	3.49	5.27	6.17	7.07	7.98	8.89	10.73	11.66	14.47
370	551	3.02	3.46	5.22	6.11	7.00	7.90	8.80	10.62	11.54	14.33
342	509	2.99	3.42	5.16	6.04	6.93	7.82	8.71	10.52	11.43	14.19
311	463	2.95	3.38	5.10	5.97	6.84	7.72	8.61	10.39	11.29	14.02
283	421	2.92	3.34	5.05	5.90	6.77	7.64	8.51	10.28	11.17	13.87
257	382	2.89	3.31	4.99	5.84	6.70	7.56	8.43	10.17	11.06	13.73
233	347	2.86	3.28	4.94	5.79	6.63	7.49	8.34	10.08	10.95	13.60
211	314	2.84	3.25	4.90	5.74	6.58	7.42	8.28	9.99	10.86	13.49
193	287	2.82	3.22	4.87	5.69	6.53	7.37	8.21	9.92	10.79	13.39
176	262	2.79	3.20	4.83	5.65	6.48	7.32	8.15	9.85	10.70	13.30
159	237	2.77	3.17	4.79	5.61	6.43	7.26	8.09	9.77	10.62	13.19
145	216	2.76	3.15	4.76	5.57	6.39	7.21	8.04	9.71	10.56	13.12
132	196	2.66	3.05	4.61	5.39	6.18	6.98	7.78	9.40	10.22	12.70
120	179	2.65	3.03	4.58	5.36	6.15	6.94	7.74	9.35	10.16	12.63
109	162	2.64	3.02	4.56	5.33	6.12	6.91	7.70	9.30	10.11	12.57
99	147	2.62	3.00	4.53	5.31	6.09	6.87	7.66	9.26	10.06	12.51
90	134	2.61	2.99	4.51	5.28	6.06	6.84	7.63	9.22	10.02	12.45
82	122	2.15	2.46	3.72	4.36	5.00	5.65	6.30	7.62	8.29	10.63

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities in columns by that amount. This deduction is applicable only when the slab above the beam's flange is 100% cellular.

The U.L. Fire Resistance Directory states that "Cavities between the upper beam flange and the floor units, if any, shall be filled with the protective material." When deck profiles were used, the volume to fill these flutes was relatively small. New decks (2" & 3" deep) having 5" to 9" wide cells require significant amounts of material to fill the flutes. This extra amount of material must be calculated and added to the bid.

Beams and Girders: W Shapes

04502125

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	7/16	1/2	3/4	7/8	1	1-1/8	1-1/4	1-1/2	1-5/8	2
W 14X 74	W 360X110	2.14	2.45	3.70	4.33	4.97	5.62	6.27	7.59	8.25	10.28
68	101	2.12	2.43	3.68	4.31	4.95	5.59	6.24	7.55	8.21	10.23
61	91	2.11	2.42	3.66	4.29	4.92	5.56	6.20	7.51	8.17	10.18
53	79	1.90	2.18	3.30	3.87	4.44	5.02	5.61	6.79	7.39	9.22
48	72	1.89	2.17	3.28	3.85	4.42	5.00	5.58	6.75	7.35	9.17
43	64	1.88	2.16	3.27	3.83	4.40	4.97	5.55	6.72	7.31	9.12
38	57	1.78	2.04	3.09	3.62	4.16	4.71	5.25	6.37	6.93	8.66
34	51	1.77	2.03	3.07	3.60	4.14	4.68	5.23	6.33	6.90	8.61
30	45	1.76	2.02	3.05	3.58	4.11	4.65	5.20	6.30	6.86	8.56
26	39	1.58	1.81	2.74	3.22	3.70	4.18	4.67	5.67	6.17	7.72
22	33	1.56	1.79	2.72	3.19	3.67	4.15	4.63	5.62	6.12	7.66
W 12X336	W 310X500	2.59	2.97	4.48	5.25	6.02	6.80	7.58	9.16	9.95	12.37
305	454	2.55	2.92	4.41	5.17	5.92	6.69	7.46	9.01	9.80	12.18
279	416	2.51	2.88	4.35	5.09	5.84	6.59	7.35	8.88	9.66	12.01
252	375	2.48	2.84	4.28	5.02	5.75	6.50	7.24	8.76	9.52	11.84
230	343	2.45	2.80	4.23	4.96	5.68	6.42	7.16	8.65	9.41	11.70
210	313	2.42	2.77	4.18	4.90	5.62	6.34	7.08	8.55	9.30	11.57
190	283	2.39	2.74	4.13	4.84	5.55	6.27	6.99	8.46	9.19	11.44
170	253	2.36	2.70	4.08	4.78	5.49	6.20	6.91	8.36	9.09	11.31
152	226	2.33	2.67	4.04	4.73	5.43	6.13	6.84	8.27	8.99	11.19
136	202	2.31	2.64	4.00	4.68	5.37	6.06	6.76	8.18	8.90	11.07
120	179	2.28	2.62	3.95	4.63	5.32	6.00	6.70	8.10	8.81	10.95
106	158	2.26	2.59	3.92	4.59	5.27	5.95	6.64	8.03	8.73	10.87
96	143	2.25	2.58	3.89	4.56	5.23	5.91	6.59	7.98	8.67	10.80
87	129	2.23	2.56	3.87	4.53	5.20	5.87	6.55	7.93	8.62	10.73
79	118	2.22	2.54	3.85	4.51	5.17	5.84	6.52	7.88	8.57	10.66
72	107	2.21	2.53	3.83	4.49	5.15	5.81	6.49	7.85	8.53	10.60
65	97	2.20	2.52	3.81	4.46	5.12	5.79	6.45	7.81	8.49	10.53
58	86	1.99	2.28	3.45	4.04	4.64	5.25	5.85	7.09	7.77	9.82
53	79	1.98	2.27	3.43	4.02	4.62	5.22	5.83	7.05	7.68	9.77
50	74	1.78	2.04	3.09	3.62	4.16	4.70	5.25	6.36	6.92	8.64
45	67	1.77	2.02	3.07	3.60	4.13	4.67	5.22	6.32	6.88	8.59
40	60	1.76	2.01	3.05	3.58	4.11	4.64	5.19	6.29	6.84	8.54
35	52	1.64	1.88	2.85	3.34	3.84	4.34	4.85	5.89	6.41	8.07
30	45	1.63	1.86	2.83	3.32	3.81	4.31	4.81	5.84	6.36	8.02
26	39	1.62	1.85	2.81	3.30	3.79	4.28	4.79	5.81	6.32	7.97
22	33	1.35	1.55	2.36	2.77	3.18	3.60	4.03	4.90	5.34	6.66
19	28	1.34	1.54	2.34	2.74	3.16	3.57	4.00	4.86	5.30	6.61
16	24	1.33	1.52	2.31	2.72	3.13	3.54	3.96	4.81	5.25	6.56
14	21	1.32	1.51	2.30	2.70	3.11	3.52	3.94	4.79	5.23	6.51
W 10X112	W 250X167	1.95	2.23	3.37	3.96	4.54	5.13	5.73	6.94	7.53	9.37
100	149	1.92	2.20	3.34	3.91	4.49	5.08	5.67	6.86	7.45	9.29
88	131	1.90	2.18	3.30	3.87	4.44	5.02	5.60	6.78	7.37	9.21
77	115	1.88	2.16	3.27	3.83	4.40	4.97	5.55	6.72	7.31	9.13
68	101	1.86	2.14	3.23	3.79	4.35	4.92	5.49	6.66	7.25	9.05
60	89	1.85	2.12	3.21	3.77	4.32	4.89	5.46	6.61	7.20	8.97
54	80	1.84	2.11	3.19	3.74	4.30	4.86	5.43	6.57	7.16	8.90
49	73	1.83	2.10	3.18	3.72	4.28	4.83	5.40	6.54	7.13	8.85
45	67	1.62	1.86	2.82	3.31	3.80	4.30	4.80	5.83	6.42	8.07
39	58	1.61	1.84	2.79	3.28	3.77	4.26	4.76	5.78	6.37	7.99
33	49	1.59	1.83	2.77	3.25	3.73	4.22	4.72	5.73	6.32	7.94
30	45	1.41	1.62	2.45	2.88	3.31	3.75	4.19	5.10	5.54	7.00
26	39	1.40	1.60	2.43	2.86	3.29	3.72	4.16	5.06	5.50	6.95
22	33	1.38	1.59	2.41	2.83	3.26	3.69	4.13	5.01	5.45	6.90
19	28	1.20	1.38	2.10	2.47	2.84	3.22	3.60	4.38	4.74	6.04
17	25	1.19	1.37	2.08	2.45	2.82	3.19	3.57	4.35	4.71	5.99
15	22	1.18	1.36	2.07	2.43	2.80	3.17	3.55	4.32	4.68	5.94
12	18	1.17	1.34	2.05	2.41	2.77	3.14	3.51	4.28	4.64	5.89

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities for columns by that amount. This deduction is applicable only when the slab above the beam is flat, that is, 100% cellular.

The U.L. Fire Resistance Directory states that "Cavities between the upper beam flange and the floor units, if any, shall be filled with the protective material." When deck profiles were shallow the volume to fill these "flutes" was relatively small. New decks, 2" & 3" deep having 5" to 9" wide cells require significant amounts of material to fill the "flutes." This extra amount of material must be calculated and added to the bid.

Beams and Girders: W Shapes

04503136

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	7/16	1/2	3/4	7/8	1	1-1/8	1-1/4	1-1/2	1-5/8	2
W 8X 67	W 200X100	1.55	1.78	2.70	3.17	3.64	4.12	4.61	5.59	6.09	7.62
58	86	1.53	1.76	2.67	3.13	3.60	4.07	4.55	5.52	6.01	7.52
48	71	1.51	1.73	2.63	3.08	3.55	4.01	4.48	5.44	5.93	7.42
40	59	1.49	1.71	2.59	3.04	3.50	3.96	4.43	5.38	5.86	7.33
35	52	1.48	1.70	2.57	3.02	3.47	3.93	4.39	5.34	5.81	7.28
31	46	1.47	1.68	2.56	3.00	3.45	3.91	4.37	5.30	5.78	7.24
28	42	1.31	1.51	2.29	2.69	3.10	3.51	3.92	4.77	5.20	6.53
24	36	1.30	1.49	2.27	2.67	3.07	3.48	3.89	4.73	5.16	6.48
21	31	1.19	1.37	2.09	2.45	2.82	3.20	3.58	4.36	4.76	5.98
18	27	1.18	1.36	2.07	2.43	2.80	3.17	3.55	4.32	4.72	5.93
15	W 200X 22	1.05	1.20	1.83	2.15	2.48	2.82	3.16	3.85	4.20	5.30
13	19	1.04	1.19	1.81	2.14	2.46	2.79	3.13	3.82	4.17	5.26
10	15	1.03	1.18	1.80	2.12	2.44	2.77	3.10	3.79	4.13	5.21
W 6X 25	W 150X 37	1.14	1.31	1.99	2.34	2.69	3.06	3.42	4.17	4.55	5.72
20	30	1.12	1.29	1.96	2.31	2.66	3.02	3.38	4.12	4.49	5.66
15	24	1.11	1.27	1.94	2.28	2.62	2.98	3.33	4.06	4.43	5.58
16	22	0.91	1.04	1.60	1.88	2.17	2.47	2.77	3.38	3.70	4.68
12	18	0.89	1.02	1.56	1.84	2.13	2.42	2.71	3.32	3.63	4.59
9	9	0.88	1.01	1.55	1.83	2.11	2.39	2.69	3.29	3.59	4.55
W 5X 19	W 130X 28	0.94	1.08	1.65	1.94	2.24	2.54	2.85	3.48	3.81	4.81
16	24	0.93	1.06	1.63	1.92	2.21	2.51	2.81	3.44	3.76	4.75
W 4X 13	W 100X 19	0.76	0.87	1.34	1.58	1.83	2.08	2.34	2.87	3.14	3.99

Beams and Girders: M Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	7/16	1/2	3/4	7/8	1	1-1/8	1-1/4	1-1/2	1-5/8	2
M 14X 18	M 360X 27	1.47	1.69	2.57	3.01	3.46	3.92	4.38	5.32	5.80	7.26
M 12X 11.8	M 310X 17.6	1.23	1.41	2.15	2.52	2.90	3.29	3.68	4.48	4.89	6.14
M 10X 9	M 250X 13.4	1.04	1.20	1.83	2.15	2.48	2.81	3.15	3.84	4.20	5.29
M 8X 6.5	M 200X 9.7	0.85	0.98	1.50	1.77	2.05	2.33	2.61	3.20	3.50	4.43
M 6X 20	M 160X 29.8	1.10	1.26	1.93	2.27	2.61	2.96	3.31	4.04	4.41	5.55
4.4	6.5	0.66	0.76	1.18	1.39	1.61	1.83	2.06	2.54	2.78	3.55
M 5X 18.9	M 130X 28.1	0.92	1.06	1.62	1.91	2.20	2.50	2.80	3.42	3.74	4.73
M 4X 13	M 100X 24.3	0.74	0.85	1.30	1.54	1.78	2.02	2.27	2.79	3.06	3.89

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by reducing the width of the beam (top flange). These quantities are in columns of that amount. The reduction is applicable only when the sap above the beam starts at 3" or 4" deep.

The U.S. Fire Resistance Directory states that "Gaps between the upper beam flange and the floor joists may, therefore, add to the product's moisture content." These moisture rules was relative to small floor decks 2' x 3' deep having 5" to 6" gaps to require significant amounts of moisture. This moisture is calculated and added to the board foot quantities.

04503137

Beams and Girders: S Shapes

Monokote Thickness in Inches

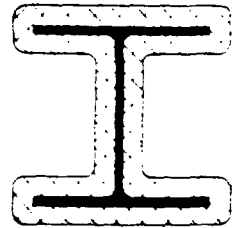
ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	7/16	1/2	3/4	7/8	1	1-1/8	1-1/4	1-1/2	1-5/8	2
S 24X121	S 610X180	2.64	3.02	4.57	5.34	6.13	6.92	7.71	8.50	9.29	10.08
106	158	2.63	3.02	4.55	5.33	6.11	6.90	7.69	8.48	9.27	10.06
100	149	2.52	2.89	4.36	5.10	5.85	6.61	7.37	8.14	8.91	9.68
90	134	2.52	2.88	4.35	5.09	5.84	6.60	7.36	8.13	8.90	9.67
80	119	2.51	2.88	4.34	5.09	5.83	6.59	7.34	8.10	8.86	9.63
S 20X 96	S 510X143	2.24	2.57	3.88	4.55	5.22	5.89	6.57	7.25	7.93	8.61
86	128	2.24	2.56	3.87	4.54	5.20	5.88	6.56	7.24	7.92	8.60
75	112	2.14	2.45	3.71	4.35	4.99	5.64	6.29	6.94	7.59	8.24
66	98	2.14	2.45	3.70	4.34	4.98	5.62	6.28	6.93	7.58	8.23
S 18X 70	S 460X104	1.98	2.26	3.43	4.02	4.61	5.21	5.82	6.44	7.06	7.68
54.7	81.4	1.97	2.25	3.41	4.00	4.59	5.19	5.79	6.41	7.03	7.65
S 15X 50	S 380X 74	1.70	1.95	2.96	3.47	3.99	4.51	5.03	5.60	6.14	6.68
42.9	64	1.70	1.95	2.95	3.46	3.97	4.49	5.02	5.59	6.13	6.67
S 12X 50	S 310X 74	1.46	1.67	2.53	2.98	3.42	3.87	4.33	4.86	5.33	5.80
40.8	60.7	1.45	1.66	2.52	2.96	3.40	3.85	4.31	4.84	5.31	5.78
35	52	1.43	1.64	2.49	2.93	3.36	3.81	4.26	4.79	5.24	5.69
31.8	47	1.43	1.64	2.49	2.92	3.36	3.80	4.25	4.78	5.23	5.68
S 10X 35	S 250X 52	1.26	1.44	2.20	2.58	2.97	3.37	3.77	4.28	4.71	5.14
25.4	38	1.25	1.43	2.18	2.56	2.95	3.34	3.74	4.25	4.68	5.11
S 8X 23	S 200X 34	1.04	1.19	1.82	2.14	2.47	2.80	3.14	3.53	3.92	4.31
18.4	27	1.03	1.19	1.81	2.13	2.46	2.79	3.12	3.51	3.90	4.29
S 7X 20	S 180X 30	0.93	1.07	1.64	1.93	2.22	2.52	2.83	3.26	3.65	4.04
15.3	S 180X 22.8	0.92	1.06	1.62	1.91	2.21	2.51	2.81	3.24	3.63	4.02
S 6X 17.25	S 150X 26	0.83	0.95	1.45	1.71	1.98	2.25	2.53	3.00	3.39	3.78
12.5	19	0.82	0.94	1.44	1.70	1.96	2.23	2.50	3.07	3.46	3.85
S 5X 14.75	S 130X 22	0.72	0.83	1.27	1.50	1.74	1.98	2.23	2.73	3.12	3.51
10	15	0.71	0.82	1.26	1.48	1.72	1.95	2.20	2.70	3.09	3.48
S 4X 9.5	S 100X 14.1	0.61	0.70	1.08	1.28	1.48	1.69	1.90	2.34	2.73	3.12
7.7	11	0.60	0.69	1.07	1.27	1.47	1.67	1.89	2.33	2.72	3.11
S 3X 7.5	S 75X 11	0.50	0.58	0.90	1.06	1.24	1.41	1.60	1.98	2.36	2.74
5.7	8	0.49	0.57	0.88	1.05	1.22	1.40	1.58	1.96	2.34	2.72

Beams and Girders: HP Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	7/16	1/2	3/4	7/8	1	1-1/8	1-1/4	1-1/2	1-5/8	2
HP 14X117	HP 360X174	2.64	3.02	4.56	5.34	6.12	6.91	7.70	8.49	9.28	10.07
102	152	2.62	3.00	4.53	5.30	6.08	6.86	7.65	8.44	9.23	10.02
89	132	2.60	2.98	4.50	5.27	6.04	6.82	7.61	8.40	9.19	9.98
73	108	2.58	2.96	4.47	5.23	6.00	6.77	7.55	8.34	9.13	9.92
HP 13X100	HP 330X149	2.38	2.72	4.12	4.82	5.53	6.25	6.97	7.70	8.42	9.15
87	129	2.36	2.70	4.09	4.79	5.49	6.20	6.92	7.65	8.37	9.10
73	109	2.34	2.68	4.06	4.75	5.45	6.15	6.86	7.59	8.31	9.04
60	87	2.32	2.66	4.02	4.71	5.41	6.10	6.81	7.53	8.25	8.98
HP 12X 84	HP 310X125	2.22	2.54	3.85	4.51	5.17	5.84	6.52	7.20	7.88	8.56
74	110	2.21	2.53	3.82	4.48	5.14	5.81	6.48	7.16	7.84	8.52
63	94	2.19	2.51	3.80	4.45	5.10	5.76	6.43	7.11	7.78	8.46
53	79	2.18	2.49	3.77	4.42	5.07	5.73	6.39	7.07	7.73	8.41
HP 10X 57	HP 250X 85	1.84	2.11	3.19	3.74	4.29	4.85	5.42	6.07	6.73	7.38
42	62	1.81	2.07	3.14	3.69	4.23	4.79	5.34	6.00	6.65	7.31
HP 8X 36	HP 200X 54	1.48	1.69	2.57	3.02	3.47	3.92	4.39	5.03	5.67	6.31

04503138



Columns: W Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	5/8	13/16	7/8	1	1-1/4	1-3/8	1-3/4	1-7/8	2-1/4	2-1/2	2-3/4	3
W 36X300	W 920X446	7.33	9.58	10.33	11.85	14.92	16.47	21.18	22.77	27.60	30.88	34.19	37.55
280	417	7.30	9.54	10.29	11.80	14.86	16.40	21.09	22.68	27.50	30.76	34.07	37.41
260	387	7.27	9.50	10.25	11.75	14.80	16.33	21.01	22.58	27.38	30.63	33.93	37.26
245	365	7.24	9.47	10.22	11.72	14.75	16.28	20.94	22.52	27.30	30.54	33.83	37.15
230	342	7.22	9.44	10.18	11.68	14.70	16.23	20.88	22.45	27.22	30.45	33.72	37.04
210	313	6.40	8.37	9.04	10.37	13.07	14.43	18.59	19.99	24.27	27.18	30.12	33.11
194	289	6.38	8.34	9.00	10.33	13.01	14.37	18.51	19.91	24.17	27.06	30.00	32.98
182	271	6.35	8.31	8.97	10.29	12.97	14.32	18.45	19.85	24.10	26.98	29.91	32.88
170	253	6.33	8.28	8.94	10.26	12.93	14.28	18.39	19.78	24.02	26.90	29.81	32.77
160	238	6.31	8.26	8.91	10.23	12.89	14.23	18.33	19.72	23.95	26.82	29.73	32.68
150	223	6.29	8.23	8.88	10.20	12.85	14.19	18.28	19.66	23.88	26.74	29.64	32.59
135	201	6.26	8.19	8.84	10.14	12.78	14.12	18.19	19.56	23.76	26.60	29.49	32.42
W 33X241	W 840X359	6.91	9.03	9.74	11.18	14.08	15.54	20.00	21.51	26.09	29.20	32.34	35.53
221	329	6.88	8.99	9.70	11.13	14.01	15.47	19.91	21.41	25.97	29.07	32.20	35.38
201	299	6.84	8.95	9.65	11.08	13.95	15.40	19.82	21.31	25.86	28.94	32.06	35.23
152	226	5.96	7.80	8.42	9.66	12.18	13.46	17.35	18.67	22.68	25.41	28.16	30.99
141	210	5.94	7.77	8.39	9.63	12.14	13.41	17.29	18.60	22.60	25.32	28.08	30.88
130	193	5.91	7.74	8.35	9.59	12.09	13.36	17.22	18.52	22.51	25.22	27.97	30.77
118	176	5.89	7.70	8.32	9.55	12.04	13.30	17.14	18.44	22.41	25.11	27.85	30.64
W 30X211	W 760X314	6.42	8.40	9.06	10.40	13.10	14.47	18.63	20.04	24.33	27.24	30.19	33.19
191	284	6.39	8.35	9.01	10.34	13.03	14.39	18.54	19.94	24.21	27.10	30.04	33.03
173	257	6.35	8.31	8.97	10.29	12.97	14.32	18.45	19.85	24.10	26.98	29.91	32.88
132	196	5.42	7.10	7.66	8.80	11.10	12.27	15.83	17.04	20.73	23.24	25.80	28.39
124	185	5.40	7.07	7.64	8.77	11.07	12.23	15.78	16.99	20.67	23.17	25.72	28.31
116	173	5.38	7.05	7.61	8.74	11.03	12.19	15.73	16.93	20.60	23.10	25.64	28.22
108	161	5.36	7.02	7.58	8.71	10.99	12.14	15.67	16.87	20.53	23.01	25.55	28.12
99	147	5.34	6.99	7.55	8.67	10.94	12.10	15.61	16.81	20.45	22.93	25.47	28.01
W 27X178	W 690X265	5.89	7.70	8.31	9.54	12.03	13.29	17.14	18.44	22.41	25.11	27.85	30.64
161	240	5.86	7.66	8.27	9.49	11.97	13.23	17.05	18.35	22.30	24.99	27.68	30.41
146	217	5.83	7.63	8.23	9.45	11.92	13.17	16.98	18.27	22.20	24.86	27.54	30.27
114	170	5.01	6.57	7.09	8.14	10.28	11.37	14.59	15.82	19.26	21.61	24.01	26.41
102	152	4.98	6.53	7.05	8.10	10.23	11.31	14.51	15.74	19.16	21.50	23.89	26.28
94	140	4.96	6.50	7.02	8.07	10.19	11.27	14.46	15.68	19.09	21.42	23.80	26.19
84	125	4.94	6.47	6.99	8.03	10.14	11.21	14.40	15.60	19.00	21.32	23.69	26.08
W 24X162	W 610X241	5.36	7.02	7.58	8.70	10.98	12.14	15.66	16.86	20.51	23.00	25.49	28.01
146	217	5.33	6.98	7.53	8.65	10.91	12.06	15.57	16.76	20.40	22.87	25.34	27.84
131	195	5.30	6.93	7.49	8.60	10.85	11.99	15.48	16.67	20.29	22.74	25.20	27.69
117	174	5.27	6.90	7.45	8.55	10.79	11.93	15.40	16.58	20.19	22.63	25.09	27.57
104	155	5.24	6.86	7.41	8.51	10.74	11.87	15.33	16.50	20.09	22.53	24.98	27.46
94	140	4.50	5.90	6.37	7.32	9.26	10.24	13.25	14.27	17.41	19.55	21.71	23.87
84	125	4.47	5.86	6.33	7.28	9.20	10.18	13.17	14.19	17.31	19.45	21.60	23.75
76	113	4.45	5.83	6.30	7.24	9.16	10.13	13.11	14.13	17.24	19.36	21.50	23.65
68	101	4.43	5.81	6.27	7.21	9.11	10.08	13.05	14.06	17.15	19.27	21.40	23.54
62	92	4.03	5.28	5.71	6.57	8.31	9.20	11.93	12.86	15.71	17.66	19.61	21.56
55	82	4.00	5.26	5.68	6.53	8.27	9.15	11.87	12.79	15.63	17.56	19.49	21.42
W 21X147	W 530X219	4.96	6.50	7.02	8.06	10.18	11.25	14.54	15.66	19.07	21.40	23.77	26.14
132	196	4.93	6.46	6.97	8.01	10.12	11.19	14.45	15.57	18.96	21.27	23.63	26.00
122	182	4.91	6.43	6.94	7.98	10.08	11.14	14.40	15.50	18.89	21.19	23.54	25.90
111	165	4.88	6.40	6.91	7.94	10.03	11.09	14.33	15.43	18.80	21.10	23.44	25.80
101	150	4.86	6.37	6.88	7.91	9.99	11.04	14.27	15.37	18.73	21.02	23.34	25.70
93	138	4.08	5.35	5.78	6.65	8.41	9.31	12.07	13.01	15.89	17.87	19.84	21.81
83	123	4.05	5.32	5.74	6.60	8.36	9.25	11.99	12.93	15.80	17.76	19.71	21.67

04503139

Columns: W Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	5/8	13/16	7/8	1	1-1/4	1-3/8	1-3/4	1-7/8	2-1/4	2-1/2	2-3/4	3
W 21X 73	W 530X 109	4.02	5.28	5.71	6.56	8.31	9.20	11.92	12.85	15.70	17.66	19.65	21.69
68	101	4.01	5.26	5.69	6.54	8.28	9.16	11.88	12.81	15.65	17.60	19.59	21.62
62	92	3.99	5.24	5.66	6.51	8.24	9.13	11.83	12.76	15.59	17.53	19.51	21.54
57	85	3.65	4.79	5.18	5.96	7.56	8.37	10.87	11.72	14.35	16.15	18.00	19.88
50	74	3.62	4.76	5.14	5.92	7.50	8.31	10.79	11.64	14.25	16.05	17.88	19.76
44	66	3.60	4.73	5.11	5.89	7.46	8.26	10.74	11.58	14.18	15.96	17.79	19.66
W 18X119	W 460X177	4.38	5.75	6.21	7.14	9.03	9.99	12.93	13.94	17.00	19.10	21.24	23.42
106	158	4.35	5.71	6.17	7.09	8.97	9.92	12.85	13.84	16.89	18.98	21.10	23.27
97	144	4.33	5.68	6.14	7.06	8.93	9.88	12.79	13.78	16.82	18.89	21.01	23.17
86	128	4.31	5.65	6.10	7.01	8.87	9.82	12.71	13.70	16.72	18.79	20.90	23.05
76	113	4.28	5.62	6.07	6.98	8.82	9.76	12.65	13.63	16.63	18.69	20.79	22.93
71	106	3.59	4.72	5.10	5.87	7.45	8.25	10.72	11.56	14.15	15.94	17.76	19.62
65	97	3.58	4.70	5.08	5.85	7.41	8.21	10.67	11.51	14.09	15.87	17.68	19.54
60	89	3.56	4.68	5.06	5.82	7.38	8.18	10.63	11.46	14.04	15.81	17.62	19.47
55	82	3.54	4.66	5.04	5.80	7.35	8.14	10.58	11.42	13.98	15.74	17.55	19.39
50	74	3.53	4.64	5.01	5.77	7.32	8.11	10.54	11.37	13.92	15.68	17.47	19.31
46	68	3.24	4.26	4.60	5.30	6.73	7.46	9.72	10.49	12.87	14.51	16.19	17.91
40	60	3.22	4.23	4.57	5.27	6.69	7.42	9.66	10.43	12.79	14.42	16.09	17.81
35	52	3.19	4.20	4.54	5.23	6.65	7.37	9.60	10.36	12.71	14.33	16.00	17.70
W 16X100	W 410X149	4.01	5.26	5.69	6.54	8.28	9.16	11.88	12.81	15.65	17.60	19.59	21.62
89	132	3.98	5.22	5.64	6.49	8.22	9.10	11.80	12.72	15.55	17.48	19.46	21.48
77	114	3.95	5.18	5.60	6.44	8.16	9.03	11.71	12.63	15.43	17.36	19.32	21.33
67	100	3.92	5.15	5.56	6.40	8.11	8.97	11.64	12.55	15.34	17.25	19.21	21.22
57	85	3.28	4.32	4.67	5.37	6.82	7.56	9.84	10.62	13.03	14.68	16.38	18.12
50	74	3.26	4.29	4.63	5.34	6.78	7.51	9.78	10.55	12.94	14.59	16.28	18.01
45	67	3.24	4.26	4.61	5.31	6.74	7.47	9.73	10.50	12.88	14.52	16.20	17.93
40	60	3.22	4.24	4.59	5.28	6.71	7.44	9.68	10.45	12.82	14.46	16.13	17.85
36	54	3.21	4.22	4.56	5.26	6.67	7.40	9.64	10.40	12.76	14.39	16.06	17.77
31	46	2.91	3.83	4.14	4.78	6.07	6.74	8.80	9.50	11.68	13.19	14.74	16.33
26	39	2.88	3.80	4.11	4.74	6.03	6.69	8.73	9.43	11.60	13.10	14.64	16.22
W 14X730	W 360X1086	5.87	7.69	8.30	9.52	12.01	13.26	17.10	18.40	22.36	25.05	27.79	30.57
665	990	5.77	7.55	8.15	9.35	11.79	13.03	16.80	18.08	21.98	24.63	27.32	30.06
605	900	5.67	7.42	8.01	9.19	11.59	12.81	16.52	17.78	21.62	24.23	26.88	29.54
550	818	5.57	7.30	7.88	9.04	11.41	12.61	16.26	17.50	21.29	23.86	26.47	29.07
500	744	5.49	7.18	7.76	8.91	11.24	12.42	16.02	17.24	20.97	23.51	26.09	28.67
455	677	5.41	7.08	7.65	8.78	11.08	12.24	15.80	17.01	20.69	23.20	25.75	28.30
426	634	5.36	7.02	7.57	8.70	10.98	12.13	15.66	16.85	20.51	22.99	25.52	28.04
398	592	5.31	6.95	7.50	8.62	10.88	12.02	15.52	16.70	20.33	22.79	25.30	27.81
370	551	5.26	6.88	7.43	8.54	10.77	11.91	15.38	16.55	20.14	22.59	25.08	27.57
342	509	5.21	6.82	7.36	8.45	10.67	11.80	15.23	16.40	19.96	22.38	24.85	27.32
311	463	5.15	6.74	7.28	8.36	10.56	11.67	15.07	16.23	19.75	22.15	24.60	27.04
283	421	5.10	6.68	7.21	8.28	10.45	11.55	14.92	16.07	19.56	21.95	24.37	26.77
257	382	5.05	6.61	7.14	8.20	10.35	11.45	14.79	15.92	19.39	21.75	24.15	26.54
233	347	5.00	6.55	7.07	8.13	10.26	11.34	14.66	15.78	19.22	21.56	23.95	26.33
211	314	4.96	6.50	7.01	8.06	10.18	11.25	14.54	15.65	19.07	21.39	23.76	26.11
193	287	4.92	6.45	6.97	8.00	10.11	11.17	14.44	15.55	18.94	21.25	23.61	25.96
176	262	4.89	6.41	6.92	7.95	10.04	11.10	14.35	15.45	18.82	21.12	23.46	25.80
159	237	4.86	6.36	6.87	7.89	9.97	11.03	14.25	15.35	18.70	20.99	23.31	25.62
145	216	4.83	6.33	6.83	7.85	9.92	10.97	14.18	15.27	18.60	20.88	23.19	25.50
132	196	4.66	6.11	6.59	7.58	9.58	10.59	13.70	14.75	17.99	20.19	22.44	24.67
120	179	4.63	6.07	6.56	7.54	9.53	10.54	13.63	14.68	17.90	20.10	22.33	24.54
109	162	4.61	6.04	6.53	7.50	9.48	10.49	13.56	14.61	17.81	20.00	22.23	24.44
99	147	4.59	6.02	6.50	7.47	9.44	10.44	13.51	14.55	17.74	19.92	22.14	24.35
90	134	4.57	5.99	6.47	7.44	9.40	10.40	13.45	14.49	17.67	19.84	22.06	24.26
82	122	3.68	4.83	5.22	6.01	7.62	8.44	10.96	11.82	14.46	16.28	18.13	20.00
74	110	3.66	4.81	5.19	5.98	7.58	8.39	10.90	11.75	14.39	16.19	18.04	19.91
68	101	3.64	4.78	5.17	5.95	7.54	8.35	10.85	11.70	14.32	16.12	17.96	19.81
61	91	3.62	4.76	5.14	5.92	7.50	8.31	10.79	11.64	14.25	16.04	17.88	19.72
53	79	3.22	4.24	4.58	5.28	6.70	7.43	9.67	10.44	12.81	14.45	16.12	17.84
48	72	3.20	4.22	4.56	5.25	6.67	7.39	9.63	10.39	12.75	14.38	16.05	17.75
43	64	3.19	4.19	4.53	5.22	6.63	7.36	9.58	10.34	12.69	14.31	15.97	17.67
38	57	2.98	3.92	4.24	4.89	6.21	6.89	8.99	9.71	11.94	13.47	15.05	16.67

04503140

Columns: W Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	5/8	13/16	7/8	1	1-1/4	1-3/8	1-3/4	1-7/8	2-1/4	2-1/2	2-3/4	3
W 14X 34	W 360X 51	2.96	3.90	4.22	4.86	6.18	6.86	8.95	9.67	11.88	13.41	14.98	16.59
30	45	2.95	3.88	4.20	4.84	6.15	6.82	8.90	9.62	11.82	13.35	14.91	16.52
26	39	2.60	3.43	3.71	4.28	5.46	6.06	7.93	8.58	10.58	11.96	13.39	14.85
22	33	2.58	3.40	3.68	4.25	5.42	6.02	7.88	8.52	10.50	11.88	13.30	14.76
W 12X336	W 310X500	4.49	5.88	6.35	7.30	9.23	10.21	13.22	14.24	17.37	19.51	21.69	23.91
305	454	4.42	5.79	6.26	7.19	9.10	10.06	13.03	14.04	17.12	19.24	21.39	23.58
279	416	4.36	5.72	6.18	7.10	8.98	9.93	12.86	13.86	16.91	19.00	21.13	23.30
252	375	4.30	5.64	6.09	7.00	8.86	9.80	12.69	13.68	16.70	18.76	20.87	23.01
230	343	4.25	5.58	6.02	6.93	8.76	9.69	12.56	13.53	16.52	18.56	20.65	22.78
210	313	4.20	5.52	5.96	6.85	8.67	9.59	12.43	13.39	16.35	18.38	20.45	22.56
190	283	4.16	5.46	5.89	6.78	8.57	9.49	12.30	13.25	16.18	18.19	20.24	22.33
170	253	4.11	5.39	5.83	6.70	8.48	9.39	12.17	13.11	16.02	18.00	20.03	22.11
152	226	4.07	5.34	5.77	6.63	8.40	9.29	12.05	12.98	15.86	17.83	19.85	21.90
136	202	4.03	5.29	5.71	6.57	8.32	9.21	11.94	12.87	15.72	17.67	19.67	21.71
120	179	3.99	5.24	5.66	6.51	8.24	9.12	11.83	12.75	15.58	17.52	19.50	21.53
106	158	3.96	5.19	5.61	6.45	8.17	9.05	11.73	12.65	15.46	17.38	19.35	21.36
96	143	3.93	5.16	5.58	6.41	8.12	8.99	11.66	12.57	15.37	17.28	19.24	21.24
87	129	3.91	5.13	5.54	6.38	8.08	8.94	11.60	12.50	15.29	17.19	19.14	21.13
79	118	3.89	5.10	5.52	6.34	8.04	8.90	11.54	12.44	15.21	17.11	19.05	21.03
72	107	3.87	5.08	5.49	6.32	8.00	8.86	11.49	12.39	15.15	17.04	18.98	20.95
65	97	3.85	5.06	5.47	6.29	7.96	8.82	11.44	12.34	15.09	16.97	18.90	20.86
58	86	3.45	4.53	4.90	5.64	7.16	7.93	10.31	11.13	13.63	15.35	17.12	18.92
53	79	3.43	4.51	4.88	5.62	7.13	7.90	10.27	11.08	13.58	15.29	17.05	18.85
50	74	3.04	4.01	4.34	5.00	6.35	7.04	9.13	9.92	12.18	13.74	15.35	16.99
45	67	3.03	3.99	4.31	4.97	6.32	7.00	9.13	9.86	12.12	13.67	15.27	16.91
40	60	3.01	3.97	4.29	4.94	6.28	6.97	9.09	9.81	12.06	13.61	15.20	16.83
35	52	2.77	3.65	3.95	4.55	5.80	6.43	8.41	9.08	11.18	12.63	14.13	15.66
30	45	2.75	3.62	3.92	4.52	5.75	6.39	8.35	9.02	11.11	12.55	14.03	15.56
26	39	2.73	3.60	3.90	4.50	5.72	6.35	8.30	8.98	11.05	12.49	13.97	15.49
22	33	2.23	2.94	3.19	3.69	4.71	5.24	6.89	7.46	9.23	10.46	11.74	13.06
19	28	2.21	2.92	3.16	3.66	4.67	5.20	6.84	7.40	9.16	10.39	11.66	12.97
16	24	2.19	2.89	3.14	3.63	4.64	5.16	6.78	7.34	9.09	10.31	11.57	12.88
14	21	2.18	2.88	3.12	3.61	4.61	5.13	6.75	7.31	9.06	10.27	11.53	12.82
W 10X112	W 250X167	3.40	4.48	4.84	5.57	7.07	7.83	10.19	11.00	13.48	15.18	16.93	18.72
100	149	3.37	4.43	4.79	5.52	7.00	7.76	10.09	10.89	13.35	15.04	16.78	18.55
88	131	3.33	4.39	4.74	5.46	6.93	7.68	9.99	10.79	13.22	14.90	16.62	18.38
77	115	3.30	4.34	4.70	5.41	6.86	7.61	9.90	10.69	13.11	14.77	16.48	18.23
68	101	3.27	4.31	4.66	5.36	6.81	7.56	9.83	10.61	13.01	14.66	16.36	18.09
60	89	3.25	4.28	4.62	5.33	6.76	7.50	9.76	10.53	12.92	14.57	16.25	17.98
54	80	3.23	4.25	4.60	5.30	6.73	7.45	9.71	10.48	12.86	14.49	16.17	17.89
49	73	3.22	4.23	4.58	5.27	6.70	7.42	9.67	10.43	12.80	14.43	16.11	17.82
45	67	2.82	3.71	4.02	4.63	5.89	6.54	8.64	9.23	11.36	12.83	14.34	15.90
39	58	2.79	3.68	3.98	4.60	5.85	6.49	8.48	9.16	11.28	12.74	14.24	15.79
33	49	2.77	3.65	3.95	4.56	5.80	6.44	8.42	9.10	11.20	12.65	14.14	15.68
30	45	2.40	3.17	3.43	3.97	5.06	5.62	7.38	7.98	9.86	11.16	12.51	13.90
26	39	2.38	3.15	3.41	3.94	5.02	5.58	7.32	7.93	9.79	11.09	12.43	13.81
22	33	2.36	3.12	3.38	3.90	4.99	5.54	7.27	7.87	9.72	11.01	12.34	13.72
19	28	2.01	2.66	2.88	3.34	4.28	4.76	6.26	6.81	8.45	9.60	10.78	12.02
17	25	1.99	2.64	2.86	3.32	4.25	4.73	6.24	6.78	8.40	9.54	10.72	11.95
15	22	1.98	2.63	2.85	3.29	4.22	4.70	6.20	6.72	8.35	9.48	10.66	11.88
12	18	1.96	2.60	2.82	3.27	4.19	4.66	6.15	6.67	8.29	9.42	10.59	11.80
W 8X 67	W 200X100	2.73	3.60	3.90	4.50	5.73	6.36	8.31	8.98	11.06	12.50	13.97	15.50
58	86	2.70	3.56	3.85	4.45	5.66	6.29	8.22	8.88	10.94	12.37	13.83	15.34
48	71	2.66	3.51	3.80	4.39	5.59	6.20	8.11	8.77	10.81	12.22	13.67	15.16
40	59	2.63	3.47	3.75	4.34	5.53	6.14	8.03	8.68	10.70	12.10	13.53	15.02
35	52	2.61	3.45	3.73	4.31	5.49	6.10	7.98	8.63	10.63	12.02	13.45	14.93
31	46	2.60	3.43	3.71	4.29	5.46	6.06	7.93	8.58	10.58	11.96	13.39	14.85
28	42	2.30	3.04	3.32	3.81	4.86	5.41	7.10	7.69	9.50	10.77	12.07	13.42
24	36	2.28	3.02	3.27	3.78	4.83	5.37	7.05	7.63	9.44	10.70	12.00	13.34
21	31	2.06	2.73	2.96	3.43	4.39	4.89	6.44	6.97	8.65	9.82	11.03	12.29
18	27	2.05	2.71	2.94	3.40	4.36	4.85	6.39	6.93	8.59	9.75	10.96	12.21
15	22	1.79	2.37	2.57	2.98	3.83	4.27	5.66	6.14	7.65	8.71	9.81	10.95

SP 4700-0

04503141

Columns: W Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	5/8	13/16	7/8	1	1-1/4	1-3/8	1-3/4	1-7/8	2-1/4	2-1/2	2-3/4	3
W 8X 13	W 200X 22	1.77	2.35	2.55	2.96	3.80	4.24	5.62	6.10	7.60	8.55	9.74	10.85
10	19	1.76	2.33	2.53	2.93	3.77	4.21	5.57	6.05	7.54	8.58	9.67	10.80
W 6X 25	W 150X 37	2.03	2.69	2.91	3.37	4.32	4.81	6.34	6.87	8.52	9.68	10.87	12.11
20	30	2.00	2.65	2.88	3.33	4.27	4.75	6.26	6.79	8.43	9.58	10.75	11.99
15	24	1.98	2.62	2.84	3.29	4.22	4.70	6.19	6.72	8.34	9.47	10.65	11.87
16	22	1.60	2.13	2.31	2.68	3.45	3.86	5.13	5.57	6.97	7.95	9.07	10.24
12	18	1.57	2.09	2.27	2.63	3.40	3.79	5.05	5.48	6.86	7.83	8.95	9.90
9	9	1.55	2.06	2.24	2.60	3.36	3.75	4.99	5.43	6.79	7.75	8.75	9.81
W 5X 19	W 130X 28	1.69	2.24	2.43	2.82	3.63	4.05	5.38	5.84	7.29	8.31	9.37	10.47
16	24	1.67	2.22	2.41	2.80	3.60	4.01	5.33	5.79	7.23	8.24	9.29	10.39
W 4X 13	W 100X 19	1.38	1.85	2.01	2.33	3.02	3.38	4.52	4.92	6.19	7.08	8.02	9.00

Columns: M Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	5/8	13/16	7/8	1	1-1/4	1-3/8	1-3/4	1-7/8	2-1/4	2-1/2	3	4
M 14X18	M 360X 25.6	2.40	3.17	3.43	3.96	5.05	5.62	7.37	7.98	9.86	11.15	12.51	13.99
M 12X11.8	M 310X 17.6	2.00	2.65	2.87	3.33	4.26	4.74	6.26	6.78	8.42	9.56	10.75	11.98
M 10X 9	M 250X 43.3	1.72	2.28	2.48	2.87	3.69	4.12	5.46	5.93	7.40	8.43	9.60	10.81
M 8X 6.5	M 200X 56.1	1.42	1.90	2.07	2.40	3.11	3.48	4.65	5.06	6.35	7.26	8.22	9.21
M 6X20	M 150X 29.8	1.97	2.61	2.83	3.27	4.19	4.67	6.16	6.68	8.30	9.43	10.60	11.81
4.4	6.5	1.13	1.52	1.65	1.93	2.52	2.82	3.81	4.16	5.28	6.07	6.91	7.79
M 5X18.9	M 130X 28.1	1.66	2.21	2.40	2.78	3.58	4.00	5.31	5.76	7.20	8.20	9.25	10.35
M 4X13	M 100X 19	1.34	1.79	1.95	2.27	2.94	3.29	4.41	4.81	6.05	6.93	7.85	8.81

Columns: S Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	5/8	13/16	7/8	1	1-1/4	1-3/8	1-3/4	1-7/8	2-1/4	2-1/2	3	4
S 24X121	S 610X180	4.28	5.61	6.06	6.97	8.81	9.75	12.63	13.61	16.61	18.67	22.78	26.42
106	158	4.26	5.59	6.03	6.94	8.78	9.71	12.58	13.55	16.55	18.59	22.64	26.28
100	149	4.06	5.33	5.76	6.62	8.38	9.28	12.03	12.97	15.84	17.81	21.82	25.47
90	134	4.05	5.32	5.74	6.60	8.36	9.25	11.99	12.93	15.80	17.76	21.77	25.41
80	119	4.04	5.30	5.72	6.58	8.33	9.22	11.96	12.89	15.75	17.71	21.71	25.35
S 20X 96	S 510X143	3.66	4.81	5.20	5.98	7.58	8.40	10.91	11.77	14.40	16.21	19.95	23.56
86	128	3.65	4.79	5.18	5.96	7.55	8.37	10.87	11.72	14.35	16.15	19.89	23.48
75	112	3.48	4.57	4.94	5.69	7.22	7.99	10.39	11.21	13.74	15.47	19.08	22.67
66	98	3.46	4.55	4.92	5.67	7.19	7.96	10.36	11.17	13.69	15.42	19.01	22.59
S 18X 70	S 460X104	3.23	4.25	4.60	5.30	6.73	7.46	9.71	10.48	12.86	14.50	18.15	21.70
54.7	81.4	3.21	4.22	4.56	5.26	6.68	7.40	9.64	10.40	12.77	14.39	18.06	21.61
S 15X 50	S 380X 74	2.81	3.70	4.01	4.62	5.88	6.53	8.53	9.21	11.34	12.80	16.01	19.57
42.9	64	2.80	3.69	3.99	4.60	5.85	6.49	8.48	9.17	11.28	12.75	15.95	19.50
S 12X 50	S 310X 74	2.45	3.24	3.50	4.04	5.16	5.73	7.52	8.13	10.04	11.36	14.13	17.43
40.8	60.7	2.43	3.20	3.47	4.01	5.11	5.68	7.45	8.06	9.95	11.27	14.02	17.32
35	52	2.39	3.16	3.42	3.95	5.05	5.61	7.36	7.96	9.84	11.14	13.88	17.18
31.8	47	2.39	3.15	3.41	3.94	5.03	5.59	7.34	7.94	9.81	11.10	13.84	17.14

04503142

04503142

Columns: S Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	5/8	13/16	7/8	1	1-1/4	1-3/8	1-3/4	1-7/8	2-1/4	2-1/2	2-3/4	3
S 10X 35 25.4	S 250X 52 38	2 14 2 11	2 83 2 79	3 07 3 03	3 55 3 50	4 54 4 48	5 05 4 99	6 65 6 57	7 20 7 11	8 92 8 82	10 12 10 00	11 36 11 23	12 65 12 51
S 8X 23 18.4	S 200X 34 27	1 79 1 77	2 37 2 35	2 57 2 55	2 98 2 96	3 83 3 80	4 27 4 24	5 66 5 61	6 14 6 09	7 65 7 59	8 71 8 64	9 81 9 73	10 95 10 87
S 7X 20 15.3	S 180X 30 22.8	1 62 1 60	2 15 2 13	2 34 2 31	2 71 2 68	3 49 3 45	3 90 3 86	5 18 5 13	5 63 5 57	7 04 6 96	8 03 7 95	9 06 8 97	10 14 10 04
S 6X 17.25 12.5	S 150X 26 19	1 45 1 43	1 94 1 90	2 10 2 07	2 44 2 41	3 16 3 11	3 53 3 48	4 71 4 65	5 13 5 06	6 44 6 35	7 36 7 26	8 33 8 22	9 33 9 22
S 5X 14.75 10	S 130X 22 15	1 28 1 25	1 72 1 68	1 87 1 83	2 18 2 13	2 83 2 77	3 17 3 10	4 25 4 17	4 63 4 55	5 84 5 74	6 70 6 58	7 60 7 47	8 64 8 40
S 4X 9.5 7.7	S 100X 14.1 11	1 10 1 08	1 47 1 46	1 61 1 59	1 88 1 86	2 45 2 42	2 75 2 72	3 72 3 68	4 07 4 03	5 16 5 11	5 94 5 89	6 77 6 71	7 63 7 57
S 3X 7.5 5.7	S 75X 11 8	0 93 0 91	1 26 1 23	1 37 1 35	1 61 1 58	2 12 2 08	2 39 2 35	3 26 3 21	3 57 3 51	4 56 4 50	5 28 5 20	6 04 5 95	6 83 6 75

Columns: HP Shapes

Monokote Thickness in Inches

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	5/8	13/16	7/8	1	1-1/4	1-3/8	1-3/4	1-7/8	2-1/4	2-1/2	2-3/4	3
HP 14X117 102 89 73	HP 360X174 152 132 108	4 63 4 60 4 57 4 53	6 07 6 03 5 99 5 94	6 55 6 51 6 47 6 42	7 53 7 48 7 43 7 38	9 52 9 45 9 40 9 33	10 52 10 46 10 39 10 32	13 61 13 53 13 45 13 35	14 66 14 57 14 49 14 38	17 88 17 77 17 66 17 54	20 07 19 95 19 84 19 70	22 31 22 17 22 05 21 90	24 59 24 44 24 30 24 14
HP 13X100 87 73 60	HP 330X149 129 109 87	4 17 4 14 4 11 4 08	5 47 5 43 5 39 5 35	5 91 5 87 5 83 5 78	6 80 6 75 6 70 6 65	8 60 8 54 8 48 8 41	9 52 9 45 9 38 9 31	12 34 12 25 12 16 12 07	13 30 13 20 13 11 13 01	16 24 16 12 16 01 15 89	18 25 18 12 18 00 17 87	20 30 20 16 20 03 19 89	22 40 22 25 22 10 21 94
HP 12X 84 74 63 53	HP 310X125 110 94 79	3 90 3 88 3 85 3 82	5 12 5 09 5 05 5 02	5 53 5 50 5 46 5 42	6 36 6 33 6 28 6 24	8 06 8 01 7 95 7 90	8 92 8 87 8 81 8 75	11 57 11 51 11 43 11 36	12 48 12 41 12 32 12 25	15 26 15 17 15 07 14 98	17 16 17 06 16 95 16 85	19 11 19 01 18 87 18 76	21 14 21 04 20 94 20 84
HP 10X 57 42	HP 250X 35 62	3 24 3 20	4 27 4 21	4 61 4 55	5 31 5 24	6 74 6 65	7 48 7 38	9 73 9 61	10 51 10 37	12 89 12 73	14 53 14 35	16 21 16 01	17 94 17 70
HP 8X 36	HP 200X 54	2 62	3 45	3 74	4 31	5 50	6 10	7 99	8 64	10 64	12 04	13 17	14 94

(with reduced thicknesses at bottom beam flange)

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities for columns by that amount. This deduction is applicable only when the side above the beam is flat (that is, 100% cellular).

The U.L. Fire Resistance Directory states that: "Gaps between the upper beam flange and the floor joists, if any, shall be filled with the protective material." When deck profiles were shallow the volume to fill these holes was relatively small. New decks 2, 3 & 4 deep have holes to 9" deep which require significant amounts of material to fill the holes. This extra amount of material must be calculated and added to the bid.

04503143

Beams and Girders: W Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	11/16	7/8	1	1-1/8	1-1/4	1-3/4	1-7/8	2-7/16	2-1/2
W 36X300	W 920X446	6.87	8.74	9.99	11.24	12.49	17.48	18.73	24.35	24.97
280	417	6.85	8.71	9.96	11.20	12.45	17.42	18.67	24.27	24.89
260	387	6.82	8.68	9.92	11.16	12.40	17.36	18.60	24.18	24.80
245	365	6.80	8.66	9.90	11.13	12.37	17.32	18.55	24.12	24.74
230	342	6.79	8.64	9.87	11.10	12.34	17.27	18.50	24.06	24.67
210	313	6.12	7.79	8.91	10.02	11.14	15.59	16.70	21.71	22.27
194	289	6.10	7.77	8.88	9.99	11.10	15.54	16.65	21.64	22.19
182	271	6.09	7.75	8.85	9.96	11.07	15.50	16.60	21.58	22.14
170	253	6.07	7.73	8.83	9.93	11.04	15.45	16.56	21.53	22.08
160	238	6.06	7.71	8.81	9.91	11.01	15.41	16.52	21.47	22.02
150	223	6.04	7.69	8.79	9.88	10.98	15.38	16.47	21.42	21.97
135	201	6.01	7.65	8.75	9.84	10.93	15.31	16.40	21.32	21.87
W 33X241	W 840X359	6.47	8.23	9.41	10.58	11.76	16.46	17.64	22.93	23.52
221	329	6.44	8.20	9.37	10.54	11.71	16.40	17.57	22.84	23.43
201	299	6.42	8.17	9.33	10.50	11.67	16.34	17.50	22.75	23.34
152	226	5.69	7.24	8.28	9.31	10.35	14.49	15.52	20.18	20.70
141	210	5.67	7.22	8.25	9.28	10.32	14.44	15.47	20.12	20.63
130	193	5.65	7.20	8.22	9.25	10.28	14.39	15.42	20.05	20.56
118	176	5.63	7.17	8.19	9.22	10.24	14.34	15.36	19.97	20.48
W 30X211	W 760X314	5.98	7.61	8.69	9.78	10.87	15.21	16.30	21.19	21.74
191	284	5.95	7.57	8.66	9.74	10.82	15.15	16.23	21.10	21.64
173	257	5.93	7.54	8.62	9.70	10.78	15.09	16.17	21.02	21.55
132	196	5.16	6.56	7.50	8.44	9.38	13.13	14.07	18.29	18.76
124	185	5.14	6.55	7.48	8.42	9.35	13.09	14.03	18.24	18.71
116	173	5.13	6.53	7.46	8.39	9.33	13.06	13.99	18.18	18.65
108	161	5.11	6.51	7.44	8.37	9.10	13.01	13.94	18.13	18.59
99	147	5.10	6.49	7.41	8.34	9.26	12.97	13.90	18.07	18.53
W 27X178	W 690X265	5.46	6.94	7.94	8.93	9.92	13.89	14.88	19.34	19.84
161	240	5.43	6.92	7.90	8.89	9.88	13.83	14.82	19.26	19.76
146	217	5.41	6.89	7.87	8.86	9.84	13.78	14.76	19.19	19.69
114	170	4.74	6.03	6.89	7.76	8.62	12.06	12.93	16.80	17.23
102	152	4.72	6.01	6.86	7.72	8.58	12.01	12.87	16.73	17.16
94	140	4.70	5.99	6.84	7.70	8.55	11.97	12.83	16.67	17.10
84	125	4.68	5.96	6.81	7.66	8.51	11.92	12.77	16.60	17.03
W 24X162	W 610X241	4.94	6.29	7.19	8.08	8.98	12.58	13.47	17.52	18.07
146	217	4.92	6.26	7.15	8.04	8.94	12.51	13.40	17.43	17.97
131	195	4.89	6.22	7.11	8.00	8.89	12.45	13.34	17.34	17.88
117	174	4.87	6.20	7.08	7.97	8.85	12.39	13.28	17.26	17.79
104	155	4.85	6.17	7.05	7.93	8.81	12.34	13.22	17.19	17.72
94	140	4.23	5.39	6.16	6.93	7.70	10.78	11.55	15.01	15.49
84	125	4.21	5.36	6.13	6.90	7.66	10.73	11.49	14.94	15.41
76	113	4.20	5.34	6.10	6.87	7.63	10.68	11.45	14.88	15.35
68	101	4.18	5.32	6.08	6.84	7.60	10.64	11.40	14.82	15.29
62	92	3.85	4.90	5.60	6.30	6.99	9.79	10.49	13.64	14.13
55	82	3.83	4.88	5.57	6.27	6.96	9.75	10.45	13.58	14.07
W 21X147	W 530X219	4.53	5.76	6.59	7.41	8.24	11.53	12.35	16.06	16.61
132	196	4.51	5.73	6.55	7.37	8.19	11.47	12.29	15.97	16.52
122	182	4.49	5.71	6.53	7.35	8.16	11.43	12.25	15.92	16.47
111	165	4.47	5.69	6.51	7.32	8.13	11.38	12.20	15.86	16.41
101	150	4.46	5.67	6.48	7.29	8.10	11.34	12.15	15.80	16.35
93	138	3.80	4.84	5.53	6.23	6.92	9.68	10.38	13.49	14.04
83	123	3.78	4.82	5.51	6.19	6.88	9.63	10.32	13.42	13.97
73	109	3.76	4.79	5.48	6.16	6.85	9.58	10.27	13.35	13.90
68	101	3.75	4.78	5.46	6.14	6.83	9.56	10.24	13.31	13.86

*Thickness shown is that required on the upper beam flange and body of the beam. Monokote thickness at the lower beam flange is exactly 1/2 of this thickness.

(with reduced thicknesses at bottom beam flange)

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities for columns by that amount. This deduction is applicable only when the slab above the beam is flat that is 100% cellular.

The U.L. Fire Resistance Directory states that "Cavities between the upper beam flange and the floor units, if any, shall be filled with the protective material. When deck profiles were shallow the volume to fill these flutes was relatively small. New decks (2" & 3" deep) having 5" to 9" wide cells require significant amounts of material to fill the flutes. This extra amount of material must be calculated and added to the bid."

Beams and Girders: W Shapes

04503144

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	11/16	7/8	1	1-1/8	1-1/4	1-3/4	1-7/8	2-7/16	2-1/2
W 21X 62	W 530X 92	3.74	4.76	5.44	6.12	6.80	9.52	10.20	13.26	13.60
57	85	3.46	4.40	5.03	5.66	6.28	8.80	9.43	12.25	12.57
50	74	3.43	4.37	5.00	5.62	6.25	8.74	9.37	12.18	12.49
44	66	3.42	4.35	4.97	5.59	6.22	8.70	9.32	12.12	12.43
W 18X119	W 460X177	3.97	5.06	5.78	6.50	7.23	10.12	10.84	14.09	14.45
106	158	3.95	5.03	5.74	6.46	7.18	10.05	10.77	14.00	14.36
97	144	3.93	5.01	5.72	6.44	7.15	10.02	10.73	13.95	14.31
86	128	3.91	4.98	5.69	6.41	7.12	9.96	10.68	13.88	14.23
76	113	3.90	4.96	5.67	6.37	7.08	9.92	10.62	13.81	14.17
71	106	3.33	4.23	4.84	5.44	6.05	8.46	9.07	11.79	12.09
65	97	3.31	4.22	4.82	5.42	6.02	8.43	9.03	11.74	12.05
60	89	3.30	4.20	4.80	5.40	6.00	8.40	9.00	11.70	12.00
55	82	3.29	4.19	4.78	5.38	5.98	8.37	8.97	11.66	11.96
50	74	3.28	4.17	4.77	5.36	5.96	8.34	8.94	11.62	11.91
46	68	3.04	3.86	4.41	4.97	5.52	7.73	8.28	10.76	11.04
40	60	3.02	3.84	4.39	4.94	5.49	7.68	8.23	10.70	10.98
35	52	3.00	3.82	4.36	4.91	5.46	7.64	8.18	10.64	10.91
W 16X100	W 410X149	3.61	4.60	5.26	5.91	6.57	9.20	9.85	12.81	13.14
89	132	3.59	4.57	5.22	5.88	6.53	9.14	9.79	12.73	13.06
77	114	3.57	4.54	5.19	5.84	6.48	9.08	9.73	12.65	12.97
67	100	3.55	4.51	5.16	5.80	6.45	9.03	9.67	12.58	12.90
57	85	3.02	3.84	4.39	4.94	5.48	7.68	8.23	10.69	10.97
50	74	3.00	3.82	4.36	4.91	5.45	7.63	8.18	10.63	10.90
45	67	2.99	3.80	4.34	4.89	5.43	7.60	8.14	10.58	10.86
40	60	2.97	3.78	4.32	4.86	5.41	7.57	8.11	10.54	10.81
36	54	2.96	3.77	4.30	4.84	5.38	7.53	8.07	10.49	10.76
31	46	2.71	3.45	3.95	4.44	4.93	6.90	7.40	9.62	9.86
26	39	2.69	3.43	3.92	4.41	4.90	6.86	7.35	9.55	9.80
W 14X730	W 360X1086	5.01	6.38	7.29	8.20	9.11	12.75	13.67	17.77	18.22
665	990	4.93	6.27	7.17	8.07	8.95	12.55	13.45	17.48	17.93
605	900	4.85	6.18	7.06	7.94	8.83	12.36	13.24	17.21	17.65
550	818	4.78	6.09	6.96	7.83	8.70	12.18	13.05	16.96	17.40
500	744	4.72	6.00	6.86	7.72	8.58	12.01	12.87	16.73	17.16
455	677	4.66	5.93	6.78	7.62	8.47	11.86	12.70	16.52	16.94
426	634	4.62	5.88	6.72	7.56	8.40	11.76	12.60	16.38	16.80
398	592	4.58	5.83	6.66	7.50	8.33	11.66	12.49	16.24	16.66
370	551	4.54	5.78	6.61	7.43	8.26	11.56	12.39	16.11	16.52
342	509	4.50	5.73	6.55	7.37	8.19	11.46	12.28	15.97	16.38
311	463	4.46	5.68	6.49	7.30	8.11	11.35	12.16	15.81	16.22
283	421	4.42	5.63	6.43	7.23	8.04	11.25	12.06	15.67	16.08
257	382	4.38	5.58	6.38	7.17	7.97	11.16	11.95	15.54	15.94
233	347	4.35	5.53	6.32	7.11	7.91	11.07	11.86	15.42	15.81
211	314	4.32	5.49	6.28	7.06	7.85	10.98	11.77	15.30	15.69
193	287	4.29	5.46	6.24	7.02	7.80	10.92	11.70	15.21	15.60
176	262	4.26	5.43	6.20	6.98	7.75	10.85	11.63	15.12	15.50
159	237	4.24	5.39	6.16	6.94	7.71	10.79	11.56	15.03	15.41
145	216	4.22	5.37	6.13	6.90	7.67	10.73	11.50	14.95	15.34
132	196	4.08	5.19	5.93	6.67	7.41	10.38	11.12	14.46	14.83
120	179	4.06	5.17	5.90	6.64	7.38	10.33	11.07	14.39	14.76
109	162	4.04	5.14	5.88	6.61	7.35	10.29	11.02	14.33	14.70
99	147	4.03	5.12	5.86	6.59	7.32	10.25	10.98	14.27	14.64
90	134	4.01	5.10	5.83	6.56	7.29	10.21	10.94	14.22	14.59
82	122	3.27	4.17	4.76	5.36	5.95	8.33	8.93	11.61	11.90

*Thickness shown is that required on the upper beam flange and body of the beam. Monokote thickness at the lower beam flange tip is exactly 1/2 of this thickness.

Beams

Board Feet of Monokote per Lineal Foot of Beam

(with reduced thicknesses at bottom beam flange)

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities for columns by that amount. This deduction is applicable only when the slab above the beam is flat, that is, 100% cellular.

The U.L. Fire Resistance Directory states that "Cavities between the upper beam flange and the floor units, if any, shall be filled with the protective material. When deck profiles were shallow the volume to fill these flutes was relatively small. New decks (2" & 3" deep) having 5" to 9" wide cells require significant amounts of material to fill the flutes. This extra amount of material must be calculated and added to the bid.

Beams and Girders: W Shapes

04503145

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	11/16	7/8	1	1-1/8	1-1/4	1-3/4	1-7/8	2-7/16	2-1/2
W 14X 74	W 360X110	3.26	4.15	4.74	5.33	5.92	8.29	8.89	11.55	11.9
68	101	3.24	4.13	4.72	5.31	5.90	8.26	8.85	11.50	11.8
61	91	3.23	4.11	4.70	5.28	5.87	8.22	8.81	11.45	11.7
53	79	2.90	3.69	4.22	4.75	5.27	7.38	7.91	10.28	10.5
48	72	2.89	3.67	4.20	4.72	5.25	7.35	7.87	10.24	10.5
43	64	2.87	3.66	4.18	4.70	5.23	7.32	7.84	10.19	10.4
38	57	2.71	3.45	3.95	4.44	4.93	6.91	7.40	9.62	9.8
34	51	2.70	3.44	3.93	4.42	4.91	6.88	7.37	9.58	9.8
30	45	2.69	3.42	3.91	4.40	4.89	6.85	7.34	9.54	9.7
26	39	2.40	3.06	3.50	3.93	4.37	6.12	6.56	8.52	8.7
22	33	2.39	3.04	3.47	3.91	4.34	6.08	6.51	8.47	8.6
W 12X338	W 310X500	3.86	4.91	5.61	6.31	7.01	9.81	10.51	13.67	14.0
305	454	3.80	4.84	5.53	6.22	6.92	9.68	10.37	13.49	13.8
279	416	3.76	4.78	5.47	6.15	6.83	9.57	10.25	13.32	13.6
252	375	3.71	4.72	5.40	6.07	6.75	9.45	10.12	13.16	13.5
230	343	3.67	4.68	5.35	6.01	6.68	9.35	10.02	13.03	13.3
210	313	3.64	4.63	5.29	5.96	6.62	9.26	9.93	12.90	13.2
190	283	3.60	4.59	5.24	5.90	6.55	9.18	9.83	12.78	13.1
170	253	3.57	4.54	5.19	5.84	6.49	9.08	9.73	12.65	12.9
152	226	3.54	4.50	5.14	5.79	6.43	9.00	9.64	12.54	12.8
136	202	3.51	4.46	5.10	5.74	6.37	8.92	9.56	12.43	12.7
120	179	3.48	4.42	5.06	5.69	6.32	8.85	9.48	12.32	12.6
106	158	3.45	4.39	5.02	5.65	6.27	8.78	9.41	12.23	12.5
96	143	3.43	4.37	4.99	5.62	6.24	8.74	9.36	12.17	12.4
87	129	3.41	4.35	4.97	5.59	6.21	8.69	9.31	12.11	12.4
79	118	3.40	4.33	4.94	5.56	6.18	8.65	9.27	12.05	12.3
72	107	3.39	4.31	4.92	5.54	6.16	8.62	9.23	12.00	12.3
65	97	3.37	4.29	4.90	5.52	6.13	8.58	9.20	11.95	12.2
58	86	3.04	3.87	4.42	4.97	5.53	7.74	8.29	10.78	11.0
53	79	3.03	3.85	4.40	4.95	5.50	7.71	8.26	10.73	11.0
50	74	2.71	3.44	3.94	4.43	4.92	6.89	7.38	9.60	9.84
45	67	2.69	3.43	3.92	4.41	4.90	6.86	7.35	9.55	9.79
40	60	2.68	3.41	3.90	4.39	4.87	6.82	7.31	9.50	9.75
35	52	2.50	3.18	3.63	4.08	4.54	6.35	6.81	8.85	9.07
30	45	2.48	3.16	3.61	4.06	4.51	6.31	6.76	8.79	9.02
26	39	2.47	3.14	3.59	4.04	4.49	6.28	6.73	8.75	8.97
22	33	2.05	2.61	2.98	3.35	3.73	5.22	5.59	7.26	7.45
19	28	2.03	2.59	2.96	3.33	3.70	5.18	5.55	7.21	7.40
16	24	2.02	2.57	2.94	3.30	3.67	5.14	5.51	7.16	7.34
14	21	2.01	2.56	2.93	3.29	3.66	5.12	5.49	7.13	7.31
W 10X112	W 250X167	2.93	3.73	4.27	4.80	5.33	7.47	8.00	10.40	10.67
100	149	2.91	3.70	4.23	4.76	5.29	7.40	7.93	10.31	10.57
88	131	2.88	3.67	4.19	4.71	5.24	7.33	7.86	10.21	10.47
77	115	2.86	3.63	4.15	4.67	5.19	7.27	7.79	10.12	10.38
68	101	2.83	3.61	4.12	4.64	5.15	7.22	7.73	10.05	10.31
60	89	2.82	3.58	4.10	4.61	5.12	7.17	7.68	9.99	10.24
54	80	2.80	3.57	4.08	4.59	5.10	7.13	7.64	9.94	10.19
49	73	2.79	3.55	4.06	4.57	5.07	7.10	7.61	9.90	10.15
45	67	2.46	3.13	3.58	4.03	4.47	6.26	6.71	8.72	8.95
39	58	2.44	3.11	3.55	4.00	4.44	6.22	6.66	8.66	8.88
33	49	2.42	3.09	3.53	3.97	4.41	6.17	6.61	8.60	8.82
30	45	2.13	2.72	3.11	3.49	3.88	5.43	5.82	7.57	7.76
26	39	2.12	2.70	3.08	3.47	3.86	5.40	5.78	7.52	7.71
22	33	2.11	2.68	3.06	3.45	3.83	5.36	5.74	7.46	7.66
19	28	1.81	2.31	2.64	2.97	3.30	4.61	4.94	6.43	6.59
17	25	1.80	2.29	2.62	2.95	3.27	4.59	4.91	6.39	6.55
15	22	1.79	2.28	2.60	2.93	3.26	4.56	4.88	6.35	6.51
12	18	1.78	2.26	2.59	2.91	3.23	4.53	4.85	6.30	6.46

*Thickness shown is that required on the upper beam flange and body of the beam. Monokote thickness at the lower beam flange tip is exactly 1/2 of this thickness.

Beams

Board Feet of Monokote per Lineal Foot of Beam

(with reduced thicknesses at bottom beam flange)

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities columns by that amount. This deduction is applicable only when the slab above the beam is flat, that is, 100% cellular.

The U.L. Fire Resistance Directory states that "Cavities between the upper beam flange and the floor units, if any, shall be filled with the protective material." When deck profiles were shallow, volume to fill these flutes was relatively small. New decks (2" & 3" deep) having 5" to 9" wide cells require significant amounts of material to fill the flutes. This extra amount of material must be calculated and added to the bid.

Beams and Girders: W Shapes

0450314

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	11/16	7/8	1	1-1/8	1-1/4	1-3/4	1-7/8	2-7/16
W 8X 67	W 200X100	2.34	2.97	3.40	3.82	4.25	5.94	6.37	8.28
58	86	2.31	2.94	3.36	3.78	4.20	5.88	6.30	8.19
48	71	2.28	2.91	3.32	3.74	4.15	5.81	6.23	8.09
40	59	2.26	2.88	3.29	3.70	4.11	5.75	6.16	8.01
35	52	2.24	2.86	3.27	3.67	4.08	5.71	6.12	7.96
31	46	2.23	2.84	3.25	3.65	4.06	5.68	6.09	7.92
28	42	1.99	2.53	2.89	3.25	3.61	5.06	5.42	7.05
24	36	1.97	2.51	2.87	3.23	3.59	5.02	5.38	7.00
21	31	1.80	2.29	2.62	2.95	3.28	4.59	4.92	6.39
18	27	1.79	2.28	2.60	2.93	3.25	4.56	4.88	6.35
15	22	1.57	2.00	2.29	2.57	2.86	4.00	4.29	5.58
13	19	1.56	1.99	2.27	2.56	2.84	3.98	4.26	5.54
10	15	1.55	1.97	2.25	2.54	2.82	3.95	4.23	5.50
W 6X 25	W 150X 37	1.71	2.18	2.49	2.80	3.12	4.36	4.67	6.07
20	30	1.69	2.16	2.46	2.77	3.08	4.31	4.62	6.01
15	24	1.67	2.13	2.44	2.74	3.04	4.26	4.57	5.94
16	22	1.36	1.73	1.98	2.22	2.47	3.46	3.71	4.82
12	18	1.34	1.70	1.94	2.19	2.43	3.40	3.64	4.74
9	9	1.32	1.68	1.92	2.16	2.40	3.36	3.60	4.69
W 5X 19	W 130X 28	1.40	1.78	2.04	2.29	2.54	3.56	3.82	4.96
16	24	1.39	1.76	2.02	2.27	2.52	3.53	3.78	4.91
W 4X 13	W 100X 19	1.12	1.43	1.63	1.84	2.04	2.86	3.06	3.98

Beams and Girders: M Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	11/16	7/8	1	1-1/8	1-1/4	1-3/4	1-7/8	2-7/16
M 14X 18	M 360X 27	2.25	2.87	3.27	3.68	4.09	5.73	6.14	7.98
M 12X 11.8	M 310X 17.6	1.87	2.38	2.72	3.06	3.40	4.76	5.10	6.63
M 10X 9	M 250X 13.4	1.58	2.01	2.30	2.58	2.87	4.02	4.30	5.60
M 8X 6.5	M 200X 9.7	1.28	1.63	1.87	2.10	2.33	3.26	3.50	4.55
M 6X 20	M 150X 29.8	1.66	2.11	2.41	2.71	3.01	4.22	4.52	5.88
M 6X 4.4	6.5	0.98	1.25	1.43	1.61	1.78	2.50	2.68	3.48
M 5X 18.9	M 130X 28.1	1.37	1.75	2.00	2.25	2.50	3.49	3.74	4.87
M 4X 13	M 100X 24.3	1.09	1.38	1.58	1.79	1.97	2.76	2.96	3.85

*Thickness shown is that required on the upper beam flange and body of the beam. Monokote thickness at the lower beam flange tip is exactly 1/2 of this thickness.

(with reduced thicknesses at bottom beam flange)

IMPORTANT: Note that board foot quantities in the estimating guide have been calculated by deducting the width of the beam's top flange. These quantities differ from the board foot quantities for columns by that amount. This deduction is applicable only when the slab above the beam is flat; that is, 100% cellular.

The U.L. Fire Resistance Directory states that "Cavities between the upper beam flange and the floor units, if any, shall be filled with the protective material." When deck profiles were shallow, the volume to fill these flutes was relatively small. New decks (2" & 3" deep) having 5" to 9" wide cells require significant amounts of material to fill the flutes. This extra amount of material must be calculated and added to the bid.

Beams and Girders: S Shapes**04503147****Monokote Thickness in Inches***

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	11/16	7/8	1	1-1/8	1-1/4	1-3/4	1-7/8	2-7/16	2-1/2
S 24X121	S 610X180	4.04	5.14	5.87	6.61	7.34	10.28	11.01	14.31	14.68
106	158	4.03	5.12	5.86	6.59	7.32	10.25	10.98	14.28	14.64
S 24X100	149	3.86	4.91	5.61	6.32	7.02	9.83	10.53	13.69	14.04
90	134	3.85	4.90	5.60	6.31	7.01	9.81	10.51	13.66	14.01
80	119	3.85	4.89	5.59	6.29	6.99	9.79	10.49	13.64	13.99
S 20X 96	S 510X143	3.42	4.35	4.97	5.60	6.22	8.70	9.33	12.12	12.43
86	128	3.41	4.34	4.96	5.58	6.20	8.68	9.30	12.09	12.40
75	112	3.27	4.16	4.76	5.35	5.95	8.33	8.92	11.60	11.89
66	98	3.26	4.15	4.75	5.34	5.93	8.31	8.90	11.57	11.87
S 18X 70	S 460X104	3.02	3.84	4.39	4.93	5.48	7.68	8.22	10.69	10.97
54.7	81.4	3.00	3.82	4.37	4.91	5.46	7.64	8.19	10.64	10.91
S 15X 50	S 380X 74	2.59	3.30	3.77	4.24	4.71	6.59	7.06	9.18	9.42
42.9	64	2.58	3.29	3.75	4.22	4.69	6.57	7.04	9.15	9.39
S 12X 50	S 310X 74	2.20	2.80	3.20	3.60	4.00	5.60	6.00	7.80	8.00
40.8	60.7	2.19	2.78	3.18	3.58	3.98	5.57	5.96	7.75	7.95
35	52	2.17	2.76	3.15	3.55	3.94	5.52	5.91	7.69	7.88
31.8	47	2.16	2.75	3.15	3.54	3.93	5.51	5.90	7.67	7.87
S 10X 35	S 250X 52	1.90	2.42	2.76	3.11	3.45	4.83	5.18	6.73	6.91
25.4	38	1.88	2.40	2.74	3.08	3.42	4.79	5.14	6.68	6.85
S 8X 23	S 200X 34	1.56	1.98	2.27	2.55	2.83	3.97	4.25	5.53	5.67
18.4	27	1.55	1.97	2.25	2.53	2.82	3.94	4.22	5.49	5.63
S 7X 20	S 180X 30	1.39	1.77	2.02	2.28	2.53	3.54	3.80	4.93	5.06
15.3	22.8	1.38	1.76	2.01	2.26	2.51	3.51	3.76	4.89	5.02
S 6X 17.25	S 150X 26	1.23	1.56	1.78	2.01	2.23	3.12	3.34	4.35	4.46
12.5	19	1.21	1.54	1.76	1.98	2.21	3.09	3.31	4.30	4.41
S 5X 14.75	S 130X 22	1.06	1.35	1.54	1.74	1.93	2.70	2.90	3.77	3.86
10	15	1.05	1.33	1.52	1.71	1.90	2.66	2.85	3.71	3.80
S 4X 9.5	S 100X 14.1	0.88	1.13	1.29	1.45	1.61	2.25	2.41	3.14	3.22
7.7	11	0.88	1.12	1.28	1.44	1.59	2.23	2.39	3.11	3.19
S 3X 7.5	S 75X 11	0.72	0.92	1.05	1.18	1.31	1.83	1.96	2.55	2.62
5.7	8	0.71	0.90	1.03	1.16	1.29	1.81	1.94	2.52	2.58

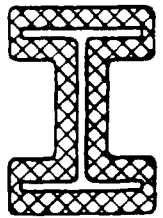
Beams and Girders: HP Shapes**Monokote Thickness in Inches***

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	11/16	7/8	1	1-1/8	1-1/4	1-3/4	1-7/8	2-7/16	2-1/2
HP 14X117	HP 360X174	4.05	5.15	5.89	6.62	7.36	10.30	11.04	14.35	14.72
102	152	4.03	5.12	5.86	6.59	7.32	10.25	10.98	14.27	14.64
89	132	4.00	5.10	5.83	6.55	7.28	10.19	10.92	14.20	14.56
73	108	3.98	5.06	5.79	6.51	7.24	10.13	10.85	14.11	14.47
HP 13X100	HP 330X149	3.64	4.64	5.30	5.96	6.63	9.28	9.94	12.92	13.25
87	129	3.62	4.61	5.27	5.93	6.59	9.22	9.88	12.84	13.17
73	109	3.60	4.58	5.24	5.89	6.54	9.16	9.82	12.76	13.09
60	87	3.58	4.55	5.20	5.85	6.50	9.10	9.75	12.68	13.00
HP 12X 84	HP 310X125	3.40	4.33	4.95	5.57	6.19	8.66	9.28	12.06	12.37
74	110	3.39	4.31	4.92	5.54	6.15	8.62	9.23	12.00	12.31
63	94	3.36	4.28	4.89	5.50	6.12	8.56	9.17	11.93	12.23
53	79	3.35	4.26	4.87	5.47	6.08	8.52	9.12	11.86	12.16
HP 10X 57	HP 250X 85	2.81	3.57	4.08	4.59	5.10	7.14	7.65	9.95	10.20
42	62	2.77	3.53	4.03	4.54	5.04	7.05	7.56	9.83	10.08
HP 8X 36	HP 200X 54	2.24	2.86	3.26	3.67	4.08	5.71	6.12	7.96	8.16

*Thickness shown is that required on the upper beam flange and body of the beam. Monokote thickness at the lower beam flange is exactly 1/2 of this thickness.

(with reduced thickness at flange tips)

04503148



Columns: W Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	3/4	15/16	1	1-1/8	1-1/4	1-1/2	1-5/8	2-5/16	2-1/2	3-1/4	3-5/16
W 36X300	W 920X446	8.43	10.54	11.24	12.64	14.05	16.86	18.26	25.99	28.09	36.52	37.22
280	417	8.41	10.51	11.21	12.61	14.01	16.81	18.21	25.92	28.02	36.43	37.13
260	387	8.39	10.48	11.18	12.58	13.98	16.77	18.17	25.85	27.95	36.34	37.03
245	365	8.37	10.46	11.16	12.55	13.95	16.74	18.13	25.80	27.90	36.26	36.96
230	342	8.35	10.44	11.14	12.53	13.92	16.70	18.10	25.75	27.84	36.19	36.89
210	313	7.36	9.20	9.81	11.04	12.26	14.71	15.94	22.69	24.52	31.88	32.50
194	289	7.34	9.17	9.78	11.01	12.23	14.67	15.90	22.62	24.46	31.79	32.40
182	271	7.32	9.15	9.76	10.98	12.20	14.64	15.86	22.58	24.41	31.73	32.34
170	253	7.31	9.13	9.74	10.96	12.18	14.61	15.83	22.53	24.35	31.66	32.27
160	238	7.29	9.12	9.72	10.94	12.15	14.58	15.80	22.49	24.31	31.60	32.21
150	223	7.28	9.10	9.71	10.92	12.13	14.56	15.77	22.44	24.26	31.54	32.15
135	201	7.26	9.07	9.68	10.89	12.10	14.52	15.72	22.38	24.19	31.45	32.05
W 33X241	W 840X359	7.96	9.95	10.61	11.94	13.26	15.92	17.24	24.54	26.53	34.49	35.15
221	329	7.94	9.92	10.58	11.90	13.23	15.87	17.20	24.47	26.45	34.39	35.05
201	299	7.91	9.89	10.55	11.87	13.19	15.83	17.15	24.40	26.38	34.29	34.95
152	226	6.87	8.58	9.16	10.30	11.44	13.73	14.88	21.17	22.89	29.75	30.33
141	210	6.85	8.56	9.13	10.28	11.42	13.70	14.84	21.12	22.84	29.69	30.26
130	193	6.83	8.54	9.11	10.25	11.39	13.67	14.81	21.07	22.78	29.62	30.19
118	176	6.82	8.52	9.09	10.22	11.36	13.63	14.77	21.02	22.72	29.54	30.11
W 30X211	W 760X314	7.38	9.23	9.84	11.07	12.30	14.77	16.00	22.76	24.61	31.99	32.61
191	284	7.36	9.20	9.81	11.04	12.26	14.72	15.94	22.69	24.53	31.89	32.50
173	257	7.34	9.17	9.78	11.00	12.23	14.67	15.90	22.62	24.45	31.79	32.40
132	196	6.22	7.78	8.30	9.33	10.37	12.45	13.48	19.19	20.74	26.97	27.49
124	185	6.21	7.76	8.28	9.32	10.35	12.42	13.46	19.15	20.70	26.91	27.43
116	173	6.20	7.75	8.26	9.30	10.33	12.40	13.43	19.11	20.66	26.86	27.38
108	161	6.18	7.73	8.25	9.28	10.31	12.37	13.40	19.07	20.61	26.80	27.31
99	147	6.17	7.71	8.23	9.26	10.28	12.34	13.37	19.02	20.57	26.74	27.25
W 27X178	W 690X265	6.76	8.45	9.01	10.14	11.26	13.52	14.64	20.84	22.53	29.29	29.85
161	240	6.74	8.42	8.98	10.10	11.23	13.47	14.60	20.77	22.45	29.19	29.75
146	217	6.72	8.40	8.96	10.07	11.19	13.43	14.55	20.71	22.39	29.10	29.66
114	170	5.74	7.18	7.66	8.61	9.57	11.48	12.44	17.70	19.14	24.88	25.36
102	152	5.72	7.15	7.63	8.58	9.54	11.44	12.40	17.64	19.07	24.79	25.27
94	140	5.71	7.14	7.61	8.56	9.51	11.42	12.37	17.60	19.03	24.74	25.21
84	125	5.69	7.11	7.59	8.54	9.49	11.38	12.33	17.55	18.97	24.66	25.14
W 24X162	W 610X241	6.12	7.65	8.16	9.18	10.21	12.25	13.27	18.88	20.41	26.53	27.04
146	217	6.10	7.63	8.13	9.15	10.17	12.20	13.22	18.81	20.33	26.43	26.94
131	195	6.08	7.60	8.10	9.12	10.13	12.16	13.17	18.74	20.26	26.34	26.85
117	174	6.06	7.57	8.08	9.09	10.10	12.12	13.12	18.68	20.19	26.25	26.75
104	155	6.04	7.55	8.05	9.06	10.06	12.08	13.08	18.62	20.13	26.17	26.67
94	140	5.13	6.41	6.84	7.70	8.55	10.26	11.12	15.82	17.10	22.24	22.66
84	125	5.11	6.39	6.82	7.67	8.52	10.23	11.08	15.76	17.04	22.15	22.58
76	113	5.10	6.37	6.80	7.65	8.50	10.20	11.04	15.72	16.99	22.09	22.51
68	101	5.08	6.35	6.78	7.62	8.47	10.16	11.01	15.67	16.94	22.02	22.45
62	92	4.60	5.75	6.13	6.90	7.67	9.20	9.97	14.18	15.33	19.93	20.32
55	82	4.59	5.73	6.11	6.88	7.64	9.17	9.93	14.14	15.28	19.87	20.25
W 21X147	W 530X219	5.65	7.06	7.53	8.48	9.42	11.30	12.24	17.42	18.84	24.49	24.96
132	196	5.63	7.04	7.50	8.44	9.38	11.26	12.19	17.35	18.76	24.39	24.86
122	182	5.61	7.02	7.48	8.42	9.35	11.23	12.16	17.31	18.71	24.32	24.79
111	165	5.60	6.99	7.46	8.39	9.33	11.19	12.12	17.25	18.65	24.25	24.71
101	150	5.58	6.98	7.44	8.37	9.30	11.16	12.09	17.21	18.60	24.18	24.65
93	138	4.62	5.77	6.16	6.93	7.70	9.24	10.01	14.24	15.40	20.01	20.40
83	123	4.60	5.75	6.13	6.90	7.66	9.20	9.96	14.18	15.33	19.93	20.31

*Thickness shown is that required on the body of the column. Monokote thicknesses at the column flange tip is exactly 1/2 of this thickness.

04503149

Columns W Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	3/4	15/16	1	1-1/8	1-1/4	1-1/2	1-5/8	2-5/16	2-1/2	3-1/4	3-5/16
W 21X 73	W 530X109	4.58	5.72	6.11	6.87	7.63	9.16	9.92	14.12	15.26	19.84	20.23
68	101	4.57	5.71	6.09	6.85	7.62	9.14	9.90	14.09	15.23	19.80	20.18
62	92	4.56	5.70	6.08	6.84	7.59	9.11	9.87	14.05	15.19	19.75	20.13
57	85	4.14	5.17	5.52	6.21	6.90	8.28	8.97	12.76	13.80	17.94	18.28
50	74	4.12	5.15	5.50	6.18	6.87	8.24	8.93	12.71	13.74	17.86	18.20
44	66	4.11	5.13	5.48	6.16	6.85	8.22	8.90	12.66	13.69	17.80	18.14
W 18X119	W 460X177	4.97	6.22	6.63	7.46	8.29	9.95	10.78	15.33	16.58	21.55	21.96
106	158	4.95	6.19	6.60	7.43	8.25	9.90	10.73	15.26	16.50	21.45	21.86
97	144	4.93	6.17	6.58	7.40	8.22	9.87	10.69	15.21	16.45	21.38	21.79
86	128	4.91	6.14	6.55	7.37	8.19	9.83	10.65	15.15	16.38	21.30	21.71
76	113	4.90	6.12	6.53	7.35	8.16	9.79	10.61	15.10	16.32	21.22	21.63
71	106	4.05	5.07	5.41	6.08	6.76	8.11	8.78	12.50	13.51	17.57	17.91
65	97	4.04	5.05	5.39	6.06	6.74	8.08	8.76	12.46	13.47	17.51	17.85
60	89	4.03	5.04	5.37	6.04	6.72	8.06	8.73	12.43	13.43	17.46	17.80
55	82	4.02	5.02	5.36	6.03	6.70	8.04	8.71	12.39	13.40	17.41	17.75
50	74	4.01	5.01	5.34	6.01	6.68	8.01	8.68	12.35	13.36	17.36	17.70
46	68	3.65	4.56	4.87	5.48	6.09	7.30	7.91	11.26	12.17	15.82	16.13
40	60	3.64	4.55	4.85	5.45	6.06	7.27	7.88	11.21	12.12	15.76	16.06
35	52	3.62	4.53	4.83	5.43	6.04	7.24	7.85	11.17	12.07	15.69	16.00
W 16X100	W 410X149	4.53	5.66	6.04	6.80	7.55	9.06	9.82	13.97	15.10	19.64	20.01
89	132	4.51	5.64	6.01	6.76	7.52	9.02	9.77	13.91	15.03	19.54	19.92
77	114	4.49	5.61	5.98	6.73	7.48	8.97	9.72	13.83	14.96	19.44	19.82
67	100	4.47	5.58	5.96	6.70	7.45	8.93	9.68	13.77	14.89	19.36	19.73
57	85	3.69	4.61	4.92	5.54	6.15	7.38	8.00	11.38	12.30	15.99	16.30
50	74	3.67	4.59	4.90	5.51	6.12	7.35	7.96	11.33	12.25	15.92	16.23
45	67	3.66	4.58	4.88	5.49	6.10	7.32	7.93	11.29	12.20	15.87	16.17
40	60	3.65	4.56	4.87	5.47	6.08	7.30	7.91	11.25	12.16	15.81	16.12
36	54	3.64	4.55	4.85	5.46	6.06	7.28	7.88	11.22	12.13	15.77	16.07
31	46	3.28	4.10	4.37	4.92	5.46	6.55	7.10	10.10	10.92	14.20	14.47
26	39	3.26	4.08	4.35	4.89	5.44	6.52	7.07	10.06	10.87	14.13	14.41
W 14X730	W 360X1086	6.28	7.85	8.37	9.42	10.46	12.56	13.60	19.36	20.93	27.20	27.73
665	990	6.20	7.75	8.26	9.30	10.33	12.40	13.43	19.11	20.66	26.86	27.38
605	900	6.12	7.66	8.17	9.19	10.21	12.25	13.27	18.88	20.41	26.54	27.05
550	818	6.06	7.57	8.07	9.08	10.09	12.11	13.12	18.67	20.18	26.24	26.74
500	744	5.99	7.49	7.99	8.99	9.99	11.98	12.98	18.47	19.97	25.96	26.46
455	677	5.93	7.42	7.91	8.90	9.89	11.87	12.86	18.29	19.78	25.71	26.20
426	634	5.89	7.37	7.86	8.84	9.82	11.79	12.77	18.17	19.65	25.54	26.03
398	592	5.86	7.32	7.81	8.79	9.75	11.71	12.69	18.06	19.52	25.38	25.87
370	551	5.82	7.27	7.76	8.73	9.70	11.64	12.61	17.94	19.40	25.22	25.70
342	509	5.78	7.23	7.71	8.67	9.64	11.56	12.53	17.83	19.27	25.05	25.53
311	463	5.74	7.17	7.65	8.61	9.56	11.48	12.43	17.69	19.13	24.87	25.35
283	421	5.70	7.13	7.60	8.55	9.50	11.40	12.35	17.58	19.00	24.70	25.18
257	382	5.66	7.08	7.55	8.49	9.44	11.33	12.27	17.46	18.88	24.54	25.01
233	347	5.63	7.04	7.51	8.44	9.38	11.26	12.20	17.36	18.76	24.39	24.86
211	314	5.60	7.00	7.46	8.40	9.33	11.19	12.13	17.26	18.66	24.26	24.72
193	287	5.57	6.96	7.43	8.36	9.29	11.14	12.07	17.18	18.57	24.14	24.61
176	262	5.55	6.93	7.40	8.32	9.25	11.10	12.02	17.10	18.49	24.04	24.50
159	237	5.52	6.90	7.36	8.28	9.20	11.04	11.96	17.03	18.41	23.93	24.39
145	216	5.50	6.88	7.33	8.25	9.17	11.00	11.92	16.96	18.34	23.84	24.30
132	196	5.30	6.63	7.07	7.96	8.84	10.61	11.49	16.36	17.68	22.99	23.43
120	179	5.29	6.61	7.05	7.93	8.81	10.57	11.45	16.30	17.62	22.91	23.35
109	162	5.27	6.59	7.02	7.90	8.78	10.54	11.41	16.24	17.56	22.83	23.27
99	147	5.25	6.57	7.00	7.88	8.76	10.51	11.38	16.20	17.51	22.76	23.20
90	134	5.24	6.55	6.99	7.86	8.73	10.48	11.35	16.15	17.46	22.70	23.14
82	122	4.15	5.19	5.53	6.23	6.92	8.30	8.99	12.80	13.84	17.99	18.33
74	110	4.13	5.17	5.51	6.20	6.89	8.27	8.96	12.75	13.78	17.92	18.26
68	101	4.12	5.15	5.50	6.18	6.87	8.24	8.93	12.71	13.74	17.86	18.20
61	91	4.11	5.13	5.48	6.16	6.85	8.22	8.90	12.66	13.69	17.80	18.14
53	79	3.63	4.53	4.84	5.44	6.04	7.25	7.86	11.18	12.09	15.71	16.02
48	72	3.61	4.52	4.82	5.42	6.02	7.23	7.83	11.14	12.05	15.66	15.96
43	64	3.60	4.50	4.80	5.40	6.00	7.20	7.80	11.11	12.01	15.61	15.91
36	57	3.35	4.19	4.47	5.03	5.59	6.70	7.26	10.33	11.17	14.52	14.80

(with reduced thickness at flange tips)

04503150

Column W Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	3/4	15/16	1	1-1/8	1-1/4	1-1/2	1-5/8	2-5/16	2-1/2	3-1/4	3-5/16
W 14X 34	W 360X 51	3.34	4.18	4.45	5.01	5.57	6.68	7.24	10.30	11.14	14.48	14.75
30	45	3.33	4.16	4.44	5.00	5.55	6.66	7.22	10.27	11.10	14.43	14.71
26	39	2.91	3.64	3.88	4.37	4.85	5.82	6.31	8.97	9.70	12.61	12.86
22	33	2.90	3.62	3.86	4.35	4.83	5.79	6.28	8.93	9.66	12.55	12.79
W 12X336	W 310X500	4.86	6.07	6.48	7.29	8.10	9.71	10.52	14.98	16.19	21.05	21.45
305	454	4.81	6.01	6.41	7.21	8.01	9.61	10.42	14.82	16.02	20.83	21.23
279	416	4.77	5.96	6.36	7.15	7.94	9.53	10.33	14.70	15.89	20.65	21.05
252	375	4.72	5.90	6.30	7.08	7.87	9.44	10.23	14.56	15.74	20.46	20.85
230	343	4.69	5.86	6.25	7.03	7.81	9.37	10.15	14.45	15.62	20.30	20.69
210	313	4.65	5.81	6.20	6.98	7.75	9.30	10.08	14.34	15.50	20.16	20.54
190	283	4.62	5.77	6.15	6.92	7.69	9.23	10.00	14.23	15.39	20.00	20.39
170	253	4.58	5.73	6.11	6.87	7.64	9.16	9.93	14.13	15.27	19.85	20.23
152	226	4.55	5.69	6.07	6.82	7.58	9.10	9.86	14.03	15.17	19.72	20.10
136	202	4.52	5.65	6.03	6.78	7.54	9.04	9.80	13.94	15.07	19.59	19.97
120	179	4.49	5.62	5.99	6.74	7.49	8.99	9.74	13.85	14.98	19.47	19.84
106	158	4.47	5.58	5.95	6.70	7.44	8.93	9.68	13.77	14.89	19.35	19.73
96	143	4.45	5.56	5.93	6.67	7.41	8.89	9.64	13.71	14.82	19.27	19.64
87	129	4.43	5.54	5.91	6.65	7.39	8.86	9.60	13.66	14.77	19.20	19.57
79	118	4.42	5.52	5.89	6.63	7.36	8.83	9.57	13.62	14.72	19.14	19.51
72	107	4.40	5.50	5.87	6.61	7.34	8.81	9.54	13.58	14.68	19.08	19.45
65	97	4.39	5.49	5.85	6.59	7.32	8.78	9.51	13.54	14.64	19.03	19.39
58	86	3.90	4.88	5.20	5.85	6.50	7.80	8.45	12.03	13.00	16.91	17.23
53	79	3.89	4.86	5.19	5.84	6.49	7.78	8.43	12.00	12.97	16.86	17.19
50	74	3.42	4.27	4.56	5.13	5.70	6.84	7.40	10.54	11.39	14.81	15.09
45	67	3.41	4.26	4.54	5.11	5.68	6.81	7.38	10.50	11.35	14.76	15.04
40	60	3.39	4.24	4.52	5.09	5.65	6.79	7.35	10.46	11.31	14.70	14.98
35	52	3.10	3.88	4.13	4.65	5.17	6.20	6.72	9.56	10.33	13.43	13.69
30	45	3.09	3.86	4.11	4.63	5.14	6.17	6.68	9.51	10.28	13.37	13.63
26	39	3.07	3.84	4.10	4.61	5.12	6.15	6.66	9.48	10.25	13.32	13.58
22	33	2.46	3.08	3.28	3.69	4.10	4.92	5.33	7.59	8.20	10.66	10.87
19	28	2.45	3.06	3.26	3.67	4.08	4.90	5.30	7.55	8.16	10.61	10.81
16	24	2.44	3.04	3.25	3.65	4.06	4.87	5.28	7.51	8.12	10.55	10.76
14	21	2.43	3.04	3.24	3.64	4.05	4.86	5.26	7.49	8.09	10.52	10.72
W 10X112	W 250X167	3.77	4.72	5.03	5.66	6.29	7.55	8.18	11.63	12.58	16.35	16.66
100	149	3.75	4.68	5.00	5.62	6.25	7.50	8.12	11.55	12.49	16.24	16.55
88	131	3.72	4.65	4.96	5.58	6.20	7.44	8.06	11.48	12.41	16.13	16.44
77	115	3.70	4.62	4.93	5.55	6.15	7.39	8.01	11.40	12.32	16.02	16.33
68	101	3.68	4.60	4.90	5.52	6.13	7.36	7.97	11.34	12.26	15.94	16.24
60	89	3.66	4.58	4.88	5.49	6.10	7.32	7.93	11.28	12.20	15.86	16.17
54	80	3.65	4.56	4.86	5.47	6.08	7.29	7.90	11.24	12.15	15.80	16.10
49	73	3.63	4.54	4.85	5.45	6.06	7.27	7.88	11.21	12.12	15.75	16.05
45	67	3.15	3.93	4.20	4.72	5.24	6.29	6.82	9.70	10.49	13.63	13.90
39	58	3.13	3.91	4.17	4.70	5.22	6.26	6.78	9.65	10.44	13.57	13.83
33	49	3.12	3.89	4.15	4.67	5.19	6.23	6.75	9.61	10.39	13.50	13.76
30	45	2.66	3.33	3.55	3.99	4.43	5.32	5.76	8.20	8.87	11.53	11.75
26	39	2.65	3.31	3.53	3.97	4.41	5.29	5.73	8.16	8.82	11.47	11.69
22	33	2.63	3.29	3.51	3.95	4.39	5.27	5.71	8.12	8.78	11.41	11.63
19	28	2.20	2.76	2.94	3.31	3.67	4.41	4.78	6.80	7.35	9.55	9.74
17	25	2.20	2.74	2.93	3.29	3.66	4.39	4.76	6.77	7.32	9.51	9.69
15	22	2.19	2.73	2.91	3.28	3.64	4.37	4.74	6.74	7.29	9.47	9.66
12	18	2.17	2.72	2.90	3.26	3.62	4.35	4.71	6.70	7.25	9.42	9.60
W 8X 67	W 200X100	3.01	3.76	4.01	4.51	5.01	6.01	6.51	9.27	10.02	13.03	13.28
58	86	2.98	3.73	3.98	4.48	4.97	5.97	6.46	9.20	9.95	12.93	13.18
48	71	2.95	3.69	3.94	4.43	4.92	5.91	6.40	9.11	9.85	12.80	13.05
40	59	2.93	3.67	3.91	4.40	4.89	5.87	6.36	9.05	9.78	12.71	12.96
35	52	2.92	3.65	3.89	4.38	4.87	5.84	6.33	9.00	9.73	12.65	12.89
31	46	2.91	3.64	3.88	4.36	4.85	5.82	6.30	8.97	9.70	12.60	12.85
28	42	2.55	3.18	3.40	3.82	4.25	5.10	5.52	7.85	8.49	11.04	11.25
24	36	2.53	3.17	3.38	3.80	4.22	5.07	5.49	7.81	8.45	10.98	11.19
21	31	2.27	2.84	3.03	3.41	3.79	4.54	4.92	7.00	7.57	9.84	10.03
18	27	2.26	2.83	3.01	3.39	3.77	4.52	4.90	6.97	7.53	9.79	9.98
15	22	1.95	2.43	2.60	2.92	3.25	3.90	4.22	6.00	6.49	8.44	8.60

*Thickness shown is that required on the body of the column. Monokote thicknesses at the column flange tip is exactly 1/2 of this thickness.

(with reduced thickness at flange tips)

04503151

Columns W Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	3/4	15/16	1	1-1/8	1-1/4	1-1/2	1-5/8	2-5/16	2-1/2	3-1/4	3-5/16
W 8X 13	W 200X 22	1.94	2.42	2.58	2.91	3.23	3.88	4.20	5.98	6.46	8.40	8.56
10	19	1.92	2.41	2.57	2.89	3.21	3.85	4.17	5.93	6.41	8.34	8.50
W 5X 25	W 150X 37	2.22	2.78	2.96	3.33	3.70	4.44	4.81	6.85	7.40	9.62	9.81
20	30	2.20	2.75	2.94	3.30	3.67	4.40	4.77	6.79	7.34	9.54	9.72
15	24	2.18	2.73	2.91	3.28	3.64	4.37	4.73	6.74	7.28	9.47	9.65
16	22	1.71	2.14	2.28	2.56	2.85	3.42	3.70	5.27	5.70	7.41	7.55
12	18	1.69	2.11	2.25	2.54	2.82	3.38	3.66	5.21	5.63	7.32	7.46
9	9	1.67	2.09	2.23	2.51	2.79	3.35	3.63	5.16	5.58	7.26	7.40
W 5X 19	W 130X 28	1.81	2.27	2.42	2.72	3.02	3.63	3.93	5.59	6.05	7.86	8.01
16	24	1.80	2.25	2.40	2.70	3.00	3.60	3.90	5.55	6.00	7.81	7.96
W 4X 13	W 100X 19	1.46	1.82	1.94	2.19	2.43	2.91	3.16	4.49	4.86	6.31	6.43

Columns M Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	3/4	15/16	1	1-1/8	1-1/4	1-1/2	1-5/8	2-5/16	2-1/2	3-1/4	3-5/16
M 14X 18	M 360X 25.6	2.69	3.36	3.59	4.03	4.48	5.38	5.83	8.29	8.96	11.65	11.88
M 12X 11.8	M 310X 17.6	2.22	2.77	2.95	3.32	3.69	4.43	4.80	6.83	7.39	9.60	9.79
M 10X 9	M 250X 43.3	1.88	2.35	2.50	2.82	3.13	3.75	4.07	5.79	6.26	8.13	8.29
M 8X 6.5	M 200X 56.1	1.53	1.91	2.04	2.29	2.55	3.06	3.31	4.72	5.10	6.63	6.76
M 6X 20	M 150X 29.8	2.16	2.69	2.87	3.23	3.59	4.31	4.67	6.65	7.19	9.34	9.52
M 6X 4.4	6.5	1.18	1.47	1.57	1.76	1.96	2.35	2.55	3.62	3.92	5.09	5.19
M 5X 18.9	M 130X 28.1	1.78	2.23	2.38	2.68	2.97	3.57	3.87	5.50	5.95	7.73	7.88
M 4X 13	19	1.41	1.76	1.88	2.11	2.34	2.81	3.05	4.34	4.69	6.10	6.21

Columns S Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	3/4	15/16	1	1-1/8	1-1/4	1-1/2	1-5/8	2-5/16	2-1/2	3-1/4	3-5/16
S 24X121	S 610X180	4.84	6.05	6.45	7.26	8.06	9.68	10.48	14.92	16.13	20.97	21.37
106	158	4.82	6.02	6.42	7.22	8.03	9.63	10.44	14.85	16.05	20.87	21.27
100	149	4.61	5.76	6.15	6.91	7.68	9.22	9.99	14.21	15.36	19.97	20.36
90	134	4.59	5.74	6.13	6.89	7.66	9.19	9.95	14.17	15.31	19.91	20.29
80	119	4.58	5.72	6.11	6.87	7.63	9.16	9.92	14.12	15.26	19.84	20.22
S 20X 96	S 510X143	4.12	5.15	5.50	6.18	6.87	8.25	8.93	12.71	13.74	17.86	18.21
86	128	4.11	5.13	5.47	6.16	6.84	8.21	8.89	12.66	13.68	17.79	18.13
75	112	3.92	4.90	5.22	5.88	6.53	7.84	8.49	12.08	13.06	16.98	17.30
66	98	3.90	4.88	5.20	5.85	6.50	7.80	8.45	12.03	13.00	16.91	17.23
S 18X 70	S 460X104	3.64	4.55	4.85	5.46	6.06	7.28	7.88	11.22	12.13	15.76	16.07
54.7	81.4	3.61	4.51	4.81	5.41	6.01	7.21	7.81	11.12	12.02	15.63	15.93
S 15X 50	S 380X 74	3.14	3.92	4.18	4.71	5.23	6.28	6.80	9.68	10.46	13.60	13.86
42.9	64	3.12	3.90	4.16	4.68	5.20	6.24	6.76	9.62	10.40	13.52	13.78

*Thickness shown is that required on the body of the column. Monokote thicknesses at the column flange tip is exactly 1/2 of this thickness

04503152

Columns S Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	3/4	15/16	1	1-1/8	1-1/4	1-1/2	1-5/8	2-5/16	2-1/2	3-1/4	3-5/16
S 12X 50	S 310X 74	2.70	3.38	3.60	4.05	4.50	5.40	5.85	8.33	9.00	11.70	11.93
40.8	60.7	2.67	3.34	3.56	4.01	4.45	5.35	5.79	8.24	8.91	11.58	11.81
35	52	2.65	3.31	3.53	3.97	4.41	5.30	5.74	8.16	8.83	11.47	11.70
31.8	47	2.64	3.30	3.52	3.96	4.40	5.28	5.72	8.13	8.79	11.43	11.65
S 10X 35	S 250X 52	2.35	2.94	3.13	3.53	3.92	4.70	5.09	7.25	7.83	10.18	10.38
25.4	38	2.32	2.89	3.09	3.47	3.86	4.63	5.02	7.14	7.72	10.03	10.22
S 8X 23	S 200X 34	1.93	2.42	2.58	2.90	3.22	3.87	4.19	5.96	6.45	8.38	8.54
18.4	27	1.91	2.39	2.55	2.87	3.19	3.83	4.15	5.90	6.38	8.29	8.45
S 7X 20	S 180X 30	1.73	2.17	2.31	2.60	2.89	3.47	3.76	5.35	5.78	7.52	7.66
15.3	22.8	1.71	2.14	2.28	2.57	2.85	3.42	3.71	5.27	5.70	7.41	7.55
S 6X 17.25	S 150X 26	1.54	1.92	2.05	2.31	2.56	3.08	3.33	4.74	5.13	6.67	6.79
12.5	19	1.51	1.89	2.01	2.26	2.52	3.02	3.27	4.65	5.03	6.54	6.67
S 5X 14.75	S 130X 22	1.34	1.68	1.79	2.02	2.24	2.69	2.91	4.14	4.48	5.82	5.93
10	15	1.31	1.64	1.74	1.96	2.18	2.62	2.84	4.03	4.36	5.67	5.78
S 4X 9.5	S 100X 14.1	1.12	1.40	1.50	1.68	1.87	2.24	2.43	3.46	3.74	4.86	4.95
7.7	11	1.11	1.38	1.47	1.66	1.84	2.21	2.39	3.41	3.68	4.79	4.88
S 3X 7.5	S 75X 11	0.93	1.16	1.23	1.39	1.54	1.85	2.01	2.86	3.09	4.01	4.09
5.7	8	0.90	1.13	1.20	1.36	1.51	1.81	1.96	2.79	3.01	3.92	3.99

Columns HP Shapes

Monokote Thickness in Inches*

ASTM Designation (in. x lb./ft.)	Metric Designation (mm x kg/m)	3/4	15/16	1	1-1/8	1-1/4	1-1/2	1-5/8	2-5/16	2-1/2	3-1/4	3-5/16
HP 14X117	HP 360X174	5.30	6.62	7.06	7.94	8.83	10.59	11.48	16.33	17.65	22.95	23.39
102	152	5.27	6.59	7.03	7.91	8.79	10.54	11.42	16.25	17.57	22.84	23.28
89	132	5.25	6.56	7.00	7.87	8.75	10.50	11.37	16.18	17.50	22.74	23.18
73	108	5.22	6.53	6.96	7.83	8.70	10.44	11.31	16.10	17.40	22.63	23.06
HP 13X100	HP 330X149	4.75	5.94	6.34	7.13	7.92	9.51	10.30	14.66	15.85	20.60	21.00
87	129	4.73	5.91	6.30	7.09	7.88	9.46	10.25	14.58	15.76	20.49	20.89
73	109	4.70	5.88	6.27	7.06	7.84	9.41	10.19	14.50	15.68	20.38	20.77
60	87	4.68	5.85	6.24	7.02	7.80	9.36	10.13	14.42	15.59	20.27	20.66
HP 12X 84	HP 310X125	4.44	5.55	5.92	6.66	7.40	8.87	9.61	13.68	14.79	19.23	19.60
74	110	4.42	5.52	5.89	6.63	7.36	8.84	9.57	13.62	14.73	19.15	19.51
63	94	4.39	5.49	5.86	6.59	7.33	8.79	9.52	13.55	14.65	19.05	19.41
53	79	4.37	5.47	5.83	6.56	7.29	8.75	9.48	13.49	14.58	18.96	19.32
HP 10X 57	HP 250X 85	3.66	4.58	4.88	5.50	6.11	7.33	7.94	11.30	12.21	15.88	16.18
42	62	3.63	4.53	4.84	5.44	6.04	7.25	7.86	11.18	12.09	15.72	16.02
HP 8X 36	HP 200X 54	2.93	3.66	3.91	4.39	4.88	5.86	6.35	9.03	9.77	12.70	12.94

*Thickness shown is that required on the body of the column. Monokote thicknesses at the column flange tip is exactly 1/2 of this thickness.

1. We propose to meet the hourly fire resistive requirements of the plans and specifications only. The applicability of these documents to laws, statutes, building codes and regulations are not the responsibility of this contractor.
2. Surfaces to receive fireproofing shall be free from any substance that would impair adhesion.
3. The general contractor will make available a permanent location for our mixing and pumping station for the duration of our activity. This site must:
 - a. Be convenient to the structure to be fireproofed.
 - b. Be able to accommodate (including access routes) truckload deliveries of material.
 - c. Have ample space for trailer parking, material, and equipment storage.
 - d. Be well drained, and
 - e. Have a convenient and constant water source with adequate pressure to maintain job schedule (minimum requirement: 15 gallons per minute per machine).
4. General contractor to furnish all necessary light, power, heat, water and temporary enclosures where required, without charge.
5. Within the building, we require free and clear ingress/egress for movable scaffolds from the floor line to the area to be fireproofed. No installation that would restrict movement of our scaffolds, personnel or equipment or limit our uninterrupted application of fireproofing materials will be permitted. Clutter, debris and/or items stored on the floor must be located where they will not interfere with said application. Protection of these items is not the responsibility of this contractor.
6. All patching and repairing of fireproofing due to damage (intentional or unintentional) by others shall be paid for by the general contractor.
7. After completion of the fireproofing work, equipment shall be removed and all exposed wall and floor areas shall be left in a broom-clean condition. We shall deposit debris either in the trash chute provided by the general contractor or outside the building (if single story) for removal by others.
8. General contractor to furnish adequate hoisting facilities including fuel and operator without charge.
9. The cost of performance and payment bond has not been included. If required, add premium cost to contract price.
10. No backcharges to our contract will be accepted unless previously agreed to by both parties in writing.
11. No penalties will be accepted for delays caused by labor walk-outs, inability to secure men or materials, or damage from acts of God.
12. We shall not be required to start work until the job is sufficiently ready for us to proceed in a continuous operation without any undue interference or delay from other crafts.
13. This proposal shall be subject to change unless accepted within thirty (30) days from date of general contract award.

Monokote Cost Estimate

04503154

Job: _____

Location: _____

General

Contractor: _____

Architect: _____

I. Rating required:

A. Deck _____ hrs.

U.L. design no. _____

B. Beams _____ hrs.

U.L. design no. _____

C. Girders _____ hrs.

U.L. design no. _____

D. Columns _____ hrs.

U.L. design no. _____

II. Board footage required:

A. Deck area (sf) _____ × bd. ft. mk./sq. ft. deck area (see table) _____

= board feet _____

B. Beams & Girders (lf) _____ × bd. ft. mk./l. ft. of beam (see table) _____

= board feet _____

C. Columns (lf) _____ × bd. ft. mk./l. ft. of column (see table) _____

= board feet _____

D. Board footage required (A + B + C) - 30 board feet/bag = bags required _____

E. Bags Required _____ + waste _____ = total bags _____

III. Material Costs:

A. Total bags _____ × cost/bag \$ _____ = material cost (f.o.b.) \$ _____

B. Material cost (f.o.b.) \$ _____ × sales tax _____ % = tax \$ _____

C. Freight to job site = \$ _____

D. Total material cost (A + B + C) = \$ _____

IV. Application Days*:

A. # _____ machines × _____ bags/day/machine = bags/day _____

B. Total bags _____ ÷ bags/day _____ = application days _____

continued

V. Labor Costs:A. # _____ spray men $\times$ \$ _____ day = \$ _____ labor/dayB. # _____ mixer men $\times$ \$ _____ day = \$ _____ labor/dayC. # _____ laborers $\times$ \$ _____ day = \$ _____ labor/dayD. \$ Labor/day required (A + B + C) $\times$ _____ application days =

Total labor costs \$ _____

VI. Incidental Costs:

A. Scaffolds = \$ _____

B. Tarpaulins = \$ _____

C. Trailer rental (when required) = \$ _____

D. Temporary heating (when required) = \$ _____

E. Other = \$ _____

F. Total incidental costs (A + B + C + D + E) = \$ _____

VII. Summary:

A. Total material cost = \$ _____

B. Total labor cost = \$ _____

C. Total incidental cost = \$ _____

D. Total application cost (A + B + C) = \$ _____

E. Total application cost \$ _____ $\times$ profit/overhead _____ % =

Total bid price \$ _____

* Application days includes estimates for:

- Set-up and dismantle
- Clean-up
- Equipment relocation
- Downtime

We hope the information given here will be helpful. It is based on our best knowledge, and we believe it to be true and accurate. Please read all statements, recommendations or suggestions herein in conjunction with our conditions of sale which apply to all goods supplied by us. We assume no responsibility for the use of these statements, recommendations, or suggestions, nor do we intend them as a recommendation for any use which would infringe any patent or copyright.

04503156

Inches (in.) $\times 0.025$ = meters (m)

Inches (in.) $\times 2.54$ = centimeters (cm)

Inches (in.) $\times 25.40$ = millimeters (mm)

Square Inches (in.²) $\times 6.52$ = square centimeters (cm²)

Square Inches (in.²) $\times 645.16$ = square millimeters (mm²)

Cubic Inches (in.³) $\times 16.39$ = cubic centimeters (cm³)

Pounds/square inch (lbs./in.²) $\times 0.07$ = kilograms/square centimeter (kg/cm²)

Feet (ft.) $\times .304$ = meters (m)

Feet (ft.) $\times 30.48$ = centimeters (cm)

Feet (ft.) $\times 304.8$ = millimeters (mm)

Square Feet (ft.²) $\times 0.093$ = square meters (m²)

Cubic Feet (ft.³) $\times 0.028$ = cubic meters (m³)

Cubic Feet (ft.³) $\times 28317$ = cubic centimeters (cm³)

Pounds/square foot (lb./ft.²) $\times 4.88$ = kilograms/square meter (kg./m²)

Pounds/cubic foot (lb./ft.³) $\times 16.02$ = kilograms/cubic meters (kg./m³)

Yards (yd.) $\times 0.914$ = meters (m)

Square Yards (yd.²) $\times 0.836$ = square meters (m²)

Cubic Yards (yd.³) $\times 0.765$ = cubic meters (m³)

Gallons, U.S. (Gal.) $\times 0.833$ = Gallons, British Imperial (Gal.)

Gallons, U.S. (Gal.) $\times 3.79$ = Liters (L)

Pounds (lbs.) $\times 453.59$ = grams (gm)

Pounds (lbs.) $\times 0.454$ = kilograms (kg)

Monokote fireproofing is estimated on a board foot per unit basis (30 board feet per bag). A board foot represents one square foot, one inch thick or $\frac{1}{12}$ th of a cubic foot (ft.³). The metric unit that replaces the board foot is the cubic meter (m³).

04503157

Monokote Cementitious Mixture

	Design No	Page	Rating (Hours)
BEAM OR JOIST ONLY	N401	394	1
	N404	395	3
	N706	401	1 1/2 2 3 3 4
	N708	402	1 1/2 2 3 3 4
	N732	417	1 1/2
	S701	568	1 1/2 2 & 3
	S702	569	1
COLUMN	X527	706	2 3 & 4
	X701	715	1 1/2 2 3 3 4
	X704	715	2 3 & 4
	X722	719	1 2 & 3
	X723	719	1 2 3 3 4
	X751	733	1 1/2 3 & 2
	X752	734	1 1/2 & 2
FLOOR ASSEMBLY	A702	41	3
	D701	82	3
	D703	83	2 & 3
	D704	87	2
	D705	87	2
	D706	88	2
	D708	89	3
	D709	91	3
	D710	92	2
	D711	92	2
	D712	93	2
	D715	97	3
	D716	97	2
	D722	98	1 1/2 & 2
	D723	102	2
	D725	103	2
	D726	103	2
	D727	104	2
	D728	105	4
	D729	105	2
	D730	106	2
	D739	109	1 1/2 & 2
	D740	112	2
	D742	112	2 & 3
	D743	113	1 1/2 & 2
	D745	116	2
	D905	161	1
	D907	162	2
	D909	164	1
	D916	169	1 1/2 1 1/2 2 & 3
	D917	170	1 1/2 2 & 3
	G701	286	3
	G702	287	1 1/2 2 & 3
	J701	295	2
	J704	296	2 3 & 4
	J705	297	2 3 & 4
ROOF ASSEMBLY	P675	518	1
	P675	518	1 1/2 & 2
	P701	520	1
	P703	521	1 1/2 & 2
	P708	523	2
	P709	525	1 1/2 & 2
	P710	525	1
	P711	526	1 1/2 & 2
	P901	540	1 1/2 & 2
	P902	541	1 1/2 & 2
	P907	547	1 1/2 & 2
	P908	548	1 1/2 & 2
	P919	561	1 1/2 & 2
	P920	562	2
	P921	564	1 1/2 & 2
	P923	565	1 1/2 & 2

Cementitious Mixture—Zonolite 105

	Design No.	Page	Rating (Hours)
	N720	409	1 1/2 2 3 & 4
	S701	568	1 & 1/2
	X738	726	2 3 & 4

Masonry Insulation

	Design No	Page	Rating (Hours)
WALL & PARTITION	U901	673	1
	U904	674	1
	U905	675	1
	U907	675	1
	U907	675	1

14 Hour Rating when core spaces are filled with Vermiculite Masonry Insulation

Vermiculite Concrete—Zonolite Roof Decks

	Design No	Page	Rating (Hours)
ROOF ASSEMBLY	P214	442	1
	P215	443	1
	P216	445	1
	P231	465	1 3/4
	P241	481	1
	P246	487	1
	P404	496	1 3/4
	P409	499	2
	P410	500	2
	P509	511	1
	P511	514	1
	P708	523	2
	P810	534	2
	P812	537	2
	P905	545	1 1/2 & 2
	P908	548	1 1/2 & 2
	P910	551	2
	P913	555	2
	P916	558	2
	P919	561	1 3/4
	P921	564	1 1/2 & 2
	P922	565	1 1/2 & 2

Indicated designs which approve use of Insulperm — Polystyrene Foam

Vermiculite Concrete

	Design No	Page	Rating (Hours)
WALL & PARTITION	U202	586	1

Vermiculite Plaster

	Design No	Page	Rating (Hours)
BEAM ONLY	N402	394	1
	N403	395	1
COLUMN	X403	666	1 1/2
	X408	668	1 1/2
	X410	669	1 1/2
	X411	690	1 1/2
FLOOR ASSEMBLY	X415	690	1 1/2
	X409	41	1
	D405	16	1
	D723	102	1
	D710	92	1 1/2
	D711	92	1 1/2
WALL & PARTITION	U715	432	1
	U401	598	1
ROOF ASSEMBLY	P404	496	1
	P409	499	1
	P908	548	1
	P919	561	1

*This Fire Resistance Directory is a complete listing of Monokote Fireproofing and other Zonolite products and designs for 1983. Please note that page numbers refer to this directory.

Notes:

04503158

Zonolite® Sales Offices

04503159

ALABAMA		2601 Commerce Blvd., Irondale 35210	(205) 956-9541
ARIZONA		4220 West Glenrosa, P.O. Box 14279, Phoenix 85063	(602) 272-6661
ARKANSAS		P.O. Box 294, North Little Rock 72115	(501) 945-1671
CALIFORNIA	ORANGE COUNTY	9430 Ravo Avenue, South Gate 90280	(213) 567-7761
	SANTA ANA	2500 South Garvey Street, P.O. Box 2303, Santa Ana 92701	(714) 979-4971
	SAN FRANCISCO OAKLAND	6451 Smith Avenue, P.O. Box 217, Newark 94560	(415) 733-3111
COLORADO		111 S. Navajo Street, Denver 80223	(303) 722-5701
FLORIDA	JACKSONVILLE	1530 E. Adams St., Jacksonville 32202	(904) 355-8431
	POMPAN0 BEACH	1200 N.W. Fifteenth Avenue, Pompano Beach 33060	(305) 974-5201
	TAMPA	P.O. Box 1447, York Station, Tampa 33605	(813) 238-1461
	WINTER PARK	225 West Canton Ave., Suite 101, Winter Park 32789	(305) 629-5857
	ZELLWOOD	P.O. Box 759, Zellwood 32798	(305) 889-3821
GEORGIA		6300 Button Gwinnett Drive, Atlanta 30362	(404) 448-5880
ILLINOIS	CHICAGO	1580 N.W. Hwy., Park Ridge 60068	(312) 694-3144
	W. CHICAGO	Fenton Industrial Park, 603 Fenton Ln., W. Chicago 60185	(312) 231-8660
KENTUCKY		112 North St., Wilder 41071	(606) 291-3500
LOUISIANA		P.O. Box 10245, Jefferson 70181	(504) 733-2934
MARYLAND		12340 Conway Rd., Beltsville 20705	(301) 953-2863
MASSACHUSETTS	BOSTON	62 Whittemore Avenue, Cambridge 02140	(617) 876-1400
	BOSTON-SPRINGFIELD-WORCESTER	Wemelco Way, Easthampton 01027	(413) 527-1890
MICHIGAN		14300 Fern Avenue, Dearborn 48126	(313) 846-1010
MINNESOTA		1720 Madison St. N.E., Minneapolis 55413	(612) 789-8845
MISSOURI		1705 Sulphur Avenue, St. Louis 63110	(314) 645-8780
NEBRASKA		3520 11th Street, Omaha 68107	(402) 731-3662
NEW JERSEY		1215 Livingston Avenue, North Brunswick 08902	(201) 828-5100
NEW YORK	SYRACUSE	P.O. Box 310, Weedsport 13166	(315) 934-6671
	NEW YORK CITY	1215 Livingston Avenue, North Brunswick, NJ 08902	(201) 828-5100
NORTH CAROLINA		P.O. Box 1308, High Point 27261	(919) 886-4807
OHIO		112 North St., Wilder, KY 41071	(606) 291-3500
OKLAHOMA		P.O. Box 11402, Oklahoma City 73136	(405) 232-2133
OREGON		2303 N. Harding St., Portland 97227	(503) 288-5195
PENNSYLVANIA	PITTSBURGH	202 E. Cherry St., P.O. Box 2207, New Castle 16102	(412) 654-7721
	PHILADELPHIA	1215 Livingston Avenue, North Brunswick, NJ 08902	(201) 828-5100
		Fallsington Industrial Park, 9 Headley Place 19054	(215) 736-2631
TENNESSEE		4061 Powell Avenue, Nashville 37204	(615) 298-3355
TEXAS		10250 E. 12th St., Houston 77038	(713) 864-2657
	HOUSTON	P.O. Box 1353, Heights Station, Houston 77008	(713) 864-2657
	SAN ANTONIO	P.O. Box 914, San Antonio 78204	(512) 223-5731
WASHINGTON		102 C St. S.W., P.O. Box A, Auburn 98002	(206) 352-5725
WISCONSIN		900 North 43rd St., Milwaukee 53208	(414) 344-6667
Canada			
ONTARIO		294 Clements Road West, Ajax L1S 3C6	(416) 683-6561
ALBERTA		5830 Burbank Road S.E., Calgary T2H 1Z3	(403) 253-1013
		14810-123rd Avenue, Edmonton T5L 2Y5	(403) 454-4511
BRITISH COLUMBIA		476 Industrial Ave., Vancouver V6A 2P3	(604) 669-4642
MANITOBA		1140 Pacific Avenue, Winnipeg R3E 1G6	(204) 786-5681
QUEBEC		255 LaSalle Avenue, LaSalle H6R 3H4	(514) 366-3362
MARITIMES		Burns Industrial Park, 1 Radden Avenue, Dartmouth N.S. B3B 1L3	(902) 469-9453

Zonolite Processing Distributors

MONTANA		Robinson Insulation Co., P.O. Box 1419, 12th St., North & River Dr., Great Falls 59403	(406) 453-1291
NEW MEXICO		SOLICO Southwest Vermiculite Co., 5119 Edith, N.E. (Box 6287), Albuquerque 87197	(505) 345-1633
TEXAS		Vermiculite Products, Inc., P.O. Box 17, 3025 Markey St., Houston 77108	(713) 864-2657
UTAH		Vermiculite Products, Inc., P.O. Box 27, 393 S. South St., Salt Lake City 84110	(801) 462-3114
CANADA		F. Hyde & Co. Ltd., 2587 Cote De Liesse, Montreal H4N 2M8, P.Q.	(514) 394-4317

This document is a sales brochure and should not be used for any other purpose. It is not intended to constitute an offer of insurance or any other financial product. All statements, recommendations or suggestions made herein are for informational purposes only and do not constitute an offer of insurance or any other financial product. No statement or recommendation should be relied upon for any use which would change any of the above information. Construction Products Division, F. Hyde & Co. Ltd., 2587 Cote De Liesse, Montreal H4N 2M8, P.Q.

6102E