Alternate Temperature Assessment

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UL Category Code: CHPX

Product: Type Pyrocrete 241, Pyrocrete 241HD

Report ID: XR734-1

COMPANY:

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Type Pyrocrete 241 and 241HD spray-applied fire resistive material is a cementitious mixture applied for fire resistance protection of structural steel framing members. This report is limited to the analysis and alternate limiting temperature thicknesses for the type of structural steel (e.g. column) as shown in the table here within.

During the standard UL 1709 evaluation, the thickness of the fire resistive material is established based on limiting steel temperatures of 1000°F (538°C) average limit and 1200°F (649°C) individual limit for columns. Based on the fire tests conducted and the performance of the fire resistive material, alternate limiting temperature thickness tables have been established. An alternate limiting temperature table is a UL design specific matrix that identifies the appropriate coating thickness for a selected steel size, limiting steel temperature, and a specified time duration. These tables are provided as additional information only, for implementation by Authorities Having Jurisdiction. The UL 1709 test method has a similar approach for establishing fire resistance ratings and therefore lends itself to this type of engineering analysis. This information is intended to be used in conjunction with the specified UL Design only. All requirements specified in the UL Design shall be met to achieve the appropriate analysis.

Refer to UL File R7209 for product Classification under category Spray-applied Fire-resistive Materials (CHPX), and Column Design No. XR734 for the fire resistance ratings developed in accordance with UL1709. The alternate limiting temperature thicknesses are intended to be used in conjunction with UL Design No. XR734 only. All required components specified in the referenced UL Design shall remain as required components to achieve the time periods shown using the alternate limiting temperature thicknesses. Only the version of UL Design No. XR734 as shown on Product iQ at **www.ul.com** is considered current.

Type Pyrocrete 241 and 241HD spray-applied fire resistive material described in this report shall be identified by a marking bearing the report holder's name or UL file number, the product name and the UL Classification Mark. The validity of this alternate temperature assessment is contingent upon this identification appearing on the product.

Appendix A – Alternate Limiting Temperature Tables

Table A1 – Alternate Limiting Temperature 250°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	29	37	40	47
0.40	335	27	35	40	47
0.50	268	27	35	39	45
0.60	223	27	34	39	45
0.70	191	26	34	39	45
0.80	167	26	34	37	45
0.84	160	26	32	37	45
0.90	149	24	32	37	45
1.00	134	24	32	37	45
1.10	122	24	32	37	45
1.20	112	24	32	37	45
1.30	103	24	32	37	45
1.40	96	23	32	37	45
1.50	89	23	32	37	45
1.60	84	23	31	37	45
1.70	79	23	31	37	45
1.80	74	23	31	37	45
1.90	71	21	31	37	45
2.00	67	21	31	37	45
2.10	64	21	31	37	45
2.20	61	21	31	37	45
2.30	58	21	31	37	45
2.40	56	20	29	37	45
2.50	54	20	29	37	45
2.55	53	20	29	37	45

Table A2 – Alternate Limiting Temperature 482°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	1 1/8	1 7/16	1 9/16	1 13/16
0.40	335	1 1/16	1 3/8	1 9/16	1 13/16
0.50	268	1 1/16	1 3/8	1 1/2	1 3/4
0.60	223	1 1/16	1 5/16	1 1/2	1 3/4
0.70	191	1	1 5/16	1 1/2	1 3/4
0.80	167	1	1 5/16	1 7/16	1 3/4
0.84	160	1	1 1/4	1 7/16	1 3/4
0.90	149	15/16	1 1/4	1 7/16	1 3/4
1.00	134	15/16	1 1/4	1 7/16	1 3/4
1.10	122	15/16	1 1/4	1 7/16	1 3/4
1.20	112	15/16	1 1/4	1 7/16	1 3/4
1.30	103	15/16	1 1/4	1 7/16	1 3/4
1.40	96	7/8	1 1/4	1 7/16	1 3/4
1.50	89	7/8	1 1/4	1 7/16	1 3/4
1.60	84	7/8	1 3/16	1 7/16	1 3/4
1.70	79	7/8	1 3/16	1 7/16	1 3/4
1.80	74	7/8	1 3/16	1 7/16	1 3/4
1.90	71	13/16	1 3/16	1 7/16	1 3/4
2.00	67	13/16	1 3/16	1 7/16	1 3/4
2.10	64	13/16	1 3/16	1 7/16	1 3/4
2.20	61	13/16	1 3/16	1 7/16	1 3/4
2.30	58	13/16	1 3/16	1 7/16	1 3/4
2.40	56	3/4	1 1/8	1 7/16	1 3/4
2.50	54	3/4	1 1/8	1 7/16	1 3/4
2.55	53	3/4	1 1/8	1 7/16	1 3/4

Table A3 – Alternate Limiting Temperature 300°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	27	34	39	45
0.40	335	26	34	39	45
0.50	268	26	32	39	43
0.60	223	26	32	37	43
0.70	191	24	32	37	43
0.80	167	24	31	35	42
0.84	160	23	31	35	42
0.90	149	23	31	35	42
1.00	134	23	31	35	42
1.10	122	23	29	35	42
1.20	112	23	29	35	42
1.30	103	21	29	35	42
1.40	96	21	29	35	42
1.50	89	21	29	35	42
1.60	84	21	27	35	42
1.70	79	20	27	35	42
1.80	74	20	27	34	42
1.90	71	20	27	34	42
2.00	67	20	27	34	42
2.10	64	18	26	34	42
2.20	61	18	26	34	42
2.30	58	18	26	34	42
2.40	56	18	26	34	42
2.50	54	16	26	34	42
2.55	53	16	24	34	42

Table A4 – Alternate Limiting Temperature 572°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	1 1/16	1 5/16	1 1/2	1 3/4
0.40	335	1	1 5/16	1 1/2	1 3/4
0.50	268	1	1 1/4	1 1/2	1 11/16
0.60	223	1	1 1/4	1 7/16	1 11/16
0.70	191	15/16	1 1/4	1 7/16	1 11/16
0.80	167	15/16	1 3/16	1 3/8	1 5/8
0.84	160	7/8	1 3/16	1 3/8	1 5/8
0.90	149	7/8	1 3/16	1 3/8	1 5/8
1.00	134	7/8	1 3/16	1 3/8	1 5/8
1.10	122	7/8	1 1/8	1 3/8	1 5/8
1.20	112	7/8	1 1/8	1 3/8	1 5/8
1.30	103	13/16	1 1/8	1 3/8	1 5/8
1.40	96	13/16	1 1/8	1 3/8	1 5/8
1.50	89	13/16	1 1/8	1 3/8	1 5/8
1.60	84	13/16	1 1/16	1 3/8	1 5/8
1.70	79	3/4	1 1/16	1 3/8	1 5/8
1.80	74	3/4	1 1/16	1 5/16	1 5/8
1.90	71	3/4	1 1/16	1 5/16	1 5/8
2.00	67	3/4	1 1/16	1 5/16	1 5/8
2.10	64	11/16	1	1 5/16	1 5/8
2.20	61	11/16	1	1 5/16	1 5/8
2.30	58	11/16	1	1 5/16	1 5/8
2.40	56	11/16	1	1 5/16	1 5/8
2.50	54	5/8	1	1 5/16	1 5/8
2.55	53	5/8	15/16	1 5/16	1 5/8

Table A5 – Alternate Limiting Temperature 350°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	26	32	39	43
0.40	335	26	32	37	43
0.50	268	24	31	37	43
0.60	223	24	31	37	42
0.70	191	23	29	35	42
0.80	167	23	29	35	40
0.84	160	23	29	35	40
0.90	149	21	29	35	40
1.00	134	21	27	34	40
1.10	122	21	27	34	40
1.20	112	20	27	34	40
1.30	103	20	26	34	40
1.40	96	20	26	32	40
1.50	89	20	26	32	40
1.60	84	18	26	32	40
1.70	79	18	24	32	40
1.80	74	18	24	31	40
1.90	71	16	24	31	40
2.00	67	16	24	31	40
2.10	64	16	23	31	40
2.20	61	15	23	31	40
2.30	58	15	23	29	40
2.40	56	15	21	29	40
2.50	54	15	21	29	40
2.55	53	13	21	29	40

Table A6 – Alternate Limiting Temperature 662°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	1	1 1/4	1 1/2	1 11/16
0.40	335	1	1 1/4	1 7/16	1 11/16
0.50	268	15/16	1 3/16	1 7/16	1 11/16
0.60	223	15/16	1 3/16	1 7/16	1 5/8
0.70	191	7/8	1 1/8	1 3/8	1 5/8
0.80	167	7/8	1 1/8	1 3/8	1 9/16
0.84	160	7/8	1 1/8	1 3/8	1 9/16
0.90	149	13/16	1 1/8	1 3/8	1 9/16
1.00	134	13/16	1 1/16	1 5/16	1 9/16
1.10	122	13/16	1 1/16	1 5/16	1 9/16
1.20	112	3/4	1 1/16	1 5/16	1 9/16
1.30	103	3/4	1	1 5/16	1 9/16
1.40	96	3/4	1	1 1/4	1 9/16
1.50	89	3/4	1	1 1/4	1 9/16
1.60	84	11/16	1	1 1/4	1 9/16
1.70	79	11/16	15/16	1 1/4	1 9/16
1.80	74	11/16	15/16	1 3/16	1 9/16
1.90	71	5/8	15/16	1 3/16	1 9/16
2.00	67	5/8	15/16	1 3/16	1 9/16
2.10	64	5/8	7/8	1 3/16	1 9/16
2.20	61	9/16	7/8	1 3/16	1 9/16
2.30	58	9/16	7/8	1 1/8	1 9/16
2.40	56	9/16	13/16	1 1/8	1 9/16
2.50	54	9/16	13/16	1 1/8	1 9/16
2.55	53	1/2	13/16	1 1/8	1 9/16

Table A7 – Alternate Limiting Temperature 400°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	24	31	37	43
0.40	335	24	31	37	42
0.50	268	23	29	35	42
0.60	223	23	29	35	42
0.70	191	21	27	34	40
0.80	167	21	27	34	40
0.84	160	21	27	34	39
0.90	149	21	27	32	39
1.00	134	20	26	32	39
1.10	122	20	26	32	39
1.20	112	20	26	32	39
1.30	103	18	24	31	39
1.40	96	18	24	31	39
1.50	89	18	24	31	39
1.60	84	16	23	29	39
1.70	79	16	23	29	39
1.80	74	15	23	29	39
1.90	71	15	21	27	39
2.00	67	15	21	27	39
2.10	64	13	21	27	39
2.20	61	13	20	26	39
2.30	58	13	20	26	39
2.40	56	12	20	26	39
2.50	54	12	18	24	39
2.55	53	12	18	24	39

Table A8 – Alternate Limiting Temperature 752°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	15/16	1 3/16	1 7/16	1 11/16
0.40	335	15/16	1 3/16	1 7/16	1 5/8
0.50	268	7/8	1 1/8	1 3/8	1 5/8
0.60	223	7/8	1 1/8	1 3/8	1 5/8
0.70	191	13/16	1 1/16	1 5/16	1 9/16
0.80	167	13/16	1 1/16	1 5/16	1 9/16
0.84	160	13/16	1 1/16	1 5/16	1 1/2
0.90	149	13/16	1 1/16	1 1/4	1 1/2
1.00	134	3/4	1	1 1/4	1 1/2
1.10	122	3/4	1	1 1/4	1 1/2
1.20	112	3/4	1	1 1/4	1 1/2
1.30	103	11/16	15/16	1 3/16	1 1/2
1.40	96	11/16	15/16	1 3/16	1 1/2
1.50	89	11/16	15/16	1 3/16	1 1/2
1.60	84	5/8	7/8	1 1/8	1 1/2
1.70	79	5/8	7/8	1 1/8	1 1/2
1.80	74	9/16	7/8	1 1/8	1 1/2
1.90	71	9/16	13/16	1 1/16	1 1/2
2.00	67	9/16	13/16	1 1/16	1 1/2
2.10	64	1/2	13/16	1 1/16	1 1/2
2.20	61	1/2	3/4	1	1 1/2
2.30	58	1/2	3/4	1	1 1/2
2.40	56	7/16	3/4	1	1 1/2
2.50	54	7/16	11/16	15/16	1 1/2
2.55	53	7/16	11/16	15/16	1 1/2

Table A9 – Alternate Limiting Temperature 450°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	23	29	35	42
0.40	335	23	29	35	42
0.50	268	23	27	34	40
0.60	223	21	27	34	40
0.70	191	21	26	32	39
0.80	167	20	26	32	39
0.84	160	20	26	32	39
0.90	149	20	26	31	39
1.00	134	20	24	31	37
1.10	122	18	24	31	37
1.20	112	18	23	29	37
1.30	103	16	23	29	37
1.40	96	16	23	27	37
1.50	89	16	21	27	37
1.60	84	15	21	27	35
1.70	79	15	21	26	35
1.80	74	13	20	26	35
1.90	71	13	20	26	35
2.00	67	13	18	24	35
2.10	64	12	18	24	34
2.20	61	12	18	23	34
2.30	58	12	16	23	34
2.40	56	10	16	23	34
2.50	54	10	16	21	34
2.55	53	10	15	21	34

Table A10 – Alternate Limiting Temperature 842°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	7/8	1 1/8	1 3/8	1 5/8
0.40	335	7/8	1 1/8	1 3/8	1 5/8
0.50	268	7/8	1 1/16	1 5/16	1 9/16
0.60	223	13/16	1 1/16	1 5/16	1 9/16
0.70	191	13/16	1	1 1/4	1 1/2
0.80	167	3/4	1	1 1/4	1 1/2
0.84	160	3/4	1	1 1/4	1 1/2
0.90	149	3/4	1	1 3/16	1 1/2
1.00	134	3/4	15/16	1 3/16	1 7/16
1.10	122	11/16	15/16	1 3/16	1 7/16
1.20	112	11/16	7/8	1 1/8	1 7/16
1.30	103	5/8	7/8	1 1/8	1 7/16
1.40	96	5/8	7/8	1 1/16	1 7/16
1.50	89	5/8	13/16	1 1/16	1 7/16
1.60	84	9/16	13/16	1 1/16	1 3/8
1.70	79	9/16	13/16	1	1 3/8
1.80	74	1/2	3/4	1	1 3/8
1.90	71	1/2	3/4	1	1 3/8
2.00	67	1/2	11/16	15/16	1 3/8
2.10	64	7/16	11/16	15/16	1 5/16
2.20	61	7/16	11/16	7/8	1 5/16
2.30	58	7/16	5/8	7/8	1 5/16
2.40	56	3/8	5/8	7/8	1 5/16
2.50	54	3/8	5/8	13/16	1 5/16
2.55	53	3/8	9/16	13/16	1 5/16

Table A11 – Alternate Limiting Temperature 500°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	23	27	34	42
0.40	335	23	27	34	40
0.50	268	21	27	32	40
0.60	223	21	26	32	39
0.70	191	20	26	31	39
0.80	167	20	24	31	37
0.84	160	18	24	29	37
0.90	149	18	24	29	37
1.00	134	18	23	29	37
1.10	122	16	23	27	35
1.20	112	16	21	27	35
1.30	103	16	21	26	35
1.40	96	15	21	26	34
1.50	89	15	20	26	34
1.60	84	13	20	24	34
1.70	79	13	18	24	32
1.80	74	12	18	23	32
1.90	71	12	16	23	32
2.00	67	12	16	21	32
2.10	64	10	16	21	31
2.20	61	10	15	21	31
2.30	58	8	15	20	31
2.40	56	8	13	20	29
2.50	54	8	13	18	29
2.55	53	7	13	18	29

Table A12 – Alternate Limiting Temperature 932°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	7/8	1 1/16	1 5/16	1 5/8
0.40	335	7/8	1 1/16	1 5/16	1 9/16
0.50	268	13/16	1 1/16	1 1/4	1 9/16
0.60	223	13/16	1	1 1/4	1 1/2
0.70	191	3/4	1	1 3/16	1 1/2
0.80	167	3/4	15/16	1 3/16	1 7/16
0.84	160	11/16	15/16	1 1/8	1 7/16
0.90	149	11/16	15/16	1 1/8	1 7/16
1.00	134	11/16	7/8	1 1/8	1 7/16
1.10	122	5/8	7/8	1 1/16	1 3/8
1.20	112	5/8	13/16	1 1/16	1 3/8
1.30	103	5/8	13/16	1	1 3/8
1.40	96	9/16	13/16	1	1 5/16
1.50	89	9/16	3/4	1	1 5/16
1.60	84	1/2	3/4	15/16	1 5/16
1.70	79	1/2	11/16	15/16	1 1/4
1.80	74	7/16	11/16	7/8	1 1/4
1.90	71	7/16	5/8	7/8	1 1/4
2.00	67	7/16	5/8	13/16	1 1/4
2.10	64	3/8	5/8	13/16	1 3/16
2.20	61	3/8	9/16	13/16	1 3/16
2.30	58	5/16	9/16	3/4	1 3/16
2.40	56	5/16	1/2	3/4	1 1/8
2.50	54	5/16	1/2	11/16	1 1/8
2.55	53	1/4	1/2	11/16	1 1/8

Table A13 – Alternate Limiting Temperature 550°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	21	27	32	40
0.40	335	21	26	32	40
0.50	268	21	26	31	39
0.60	223	20	24	31	39
0.70	191	18	24	29	37
0.80	167	18	23	29	37
0.84	160	18	23	27	37
0.90	149	16	23	27	35
1.00	134	16	21	27	35
1.10	122	16	21	26	34
1.20	112	15	20	26	34
1.30	103	15	20	24	34
1.40	96	13	20	24	32
1.50	89	13	18	23	32
1.60	84	12	18	23	31
1.70	79	12	16	21	31
1.80	74	12	16	21	29
1.90	71	10	15	20	29
2.00	67	10	15	20	29
2.10	64	8	13	18	27
2.20	61	8	13	18	27
2.30	58	7	12	16	26
2.40	56	7	12	16	26
2.50	54	7	12	16	24
2.55	53	7	10	15	24

Table A14 – Alternate Limiting Temperature 1022°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	13/16	1 1/16	1 1/4	1 9/16
0.40	335	13/16	1	1 1/4	1 9/16
0.50	268	13/16	1	1 3/16	1 1/2
0.60	223	3/4	15/16	1 3/16	1 1/2
0.70	191	11/16	15/16	1 1/8	1 7/16
0.80	167	11/16	7/8	1 1/8	1 7/16
0.84	160	11/16	7/8	1 1/16	1 7/16
0.90	149	5/8	7/8	1 1/16	1 3/8
1.00	134	5/8	13/16	1 1/16	1 3/8
1.10	122	5/8	13/16	1	1 5/16
1.20	112	9/16	3/4	1	1 5/16
1.30	103	9/16	3/4	15/16	1 5/16
1.40	96	1/2	3/4	15/16	1 1/4
1.50	89	1/2	11/16	7/8	1 1/4
1.60	84	7/16	11/16	7/8	1 3/16
1.70	79	7/16	5/8	13/16	1 3/16
1.80	74	7/16	5/8	13/16	1 1/8
1.90	71	3/8	9/16	3/4	1 1/8
2.00	67	3/8	9/16	3/4	1 1/8
2.10	64	5/16	1/2	11/16	1 1/16
2.20	61	5/16	1/2	11/16	1 1/16
2.30	58	1/4	7/16	5/8	1
2.40	56	1/4	7/16	5/8	1
2.50	54	1/4	7/16	5/8	15/16
2.55	53	1/4	3/8	9/16	15/16

Table A15 – Alternate Limiting Temperature 600°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	21	26	31	40
0.40	335	21	26	31	39
0.50	268	20	24	29	39
0.60	223	20	24	29	37
0.70	191	18	23	27	37
0.80	167	18	23	27	35
0.84	160	16	23	27	35
0.90	149	16	21	26	35
1.00	134	16	21	26	34
1.10	122	15	20	24	34
1.20	112	15	20	24	32
1.30	103	13	18	23	32
1.40	96	13	18	23	31
1.50	89	12	16	21	31
1.60	84	12	16	21	29
1.70	79	10	15	20	29
1.80	74	10	15	20	27
1.90	71	8	13	18	26
2.00	67	8	13	18	26
2.10	64	8	12	16	24
2.20	61	7	12	15	24
2.30	58	7	10	15	23
2.40	56	7	10	13	23
2.50	54	7	8	13	21
2.55	53	7	8	13	21

Table A16 – Alternate Limiting Temperature 1112°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	13/16	1	1 3/16	1 9/16
0.40	335	13/16	1	1 3/16	1 1/2
0.50	268	3/4	15/16	1 1/8	1 1/2
0.60	223	3/4	15/16	1 1/8	1 7/16
0.70	191	11/16	7/8	1 1/16	1 7/16
0.80	167	11/16	7/8	1 1/16	1 3/8
0.84	160	5/8	7/8	1 1/16	1 3/8
0.90	149	5/8	13/16	1	1 3/8
1.00	134	5/8	13/16	1	1 5/16
1.10	122	9/16	3/4	15/16	1 5/16
1.20	112	9/16	3/4	15/16	1 1/4
1.30	103	1/2	11/16	7/8	1 1/4
1.40	96	1/2	11/16	7/8	1 3/16
1.50	89	7/16	5/8	13/16	1 3/16
1.60	84	7/16	5/8	13/16	1 1/8
1.70	79	3/8	9/16	3/4	1 1/8
1.80	74	3/8	9/16	3/4	1 1/16
1.90	71	5/16	1/2	11/16	1
2.00	67	5/16	1/2	11/16	1
2.10	64	5/16	7/16	5/8	15/16
2.20	61	1/4	7/16	9/16	15/16
2.30	58	1/4	3/8	9/16	7/8
2.40	56	1/4	3/8	1/2	7/8
2.50	54	1/4	5/16	1/2	13/16
2.55	53	1/4	5/16	1/2	13/16

Table A17 – Alternate Limiting Temperature 650°C (Metric)

W/D	Hp/A	Min Required Thickness (mm) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	20	24	29	39
0.40	335	20	24	29	39
0.50	268	20	24	29	37
0.60	223	18	23	27	37
0.70	191	18	23	27	37
0.80	167	18	23	27	35
0.84	160	16	23	27	35
0.90	149	16	21	26	35
1.00	134	16	21	26	34
1.10	122	15	20	24	32
1.20	112	15	18	23	32
1.30	103	13	18	23	31
1.40	96	13	16	21	29
1.50	89	12	16	21	29
1.60	84	12	15	20	27
1.70	79	10	15	18	26
1.80	74	8	13	18	26
1.90	71	8	13	16	24
2.00	67	7	12	15	23
2.10	64	7	10	15	23
2.20	61	7	10	13	21
2.30	58	7	8	13	20
2.40	56	7	8	12	20
2.50	54	7	7	10	18
2.55	53	7	7	10	18

Table A18 – Alternate Limiting Temperature 1202°F (Imperial)

W/D	Hp/A	Min Required Thickness (in.) for Hourly Rating Period (min)			
		60	90	120	180
0.34	396	3/4	15/16	1 1/8	1 1/2
0.40	335	3/4	15/16	1 1/8	1 1/2
0.50	268	3/4	15/16	1 1/8	1 7/16
0.60	223	11/16	7/8	1 1/16	1 7/16
0.70	191	11/16	7/8	1 1/16	1 7/16
0.80	167	11/16	7/8	1 1/16	1 3/8
0.84	160	5/8	7/8	1 1/16	1 3/8
0.90	149	5/8	13/16	1	1 3/8
1.00	134	5/8	13/16	1	1 5/16
1.10	122	9/16	3/4	15/16	1 1/4
1.20	112	9/16	11/16	7/8	1 1/4
1.30	103	1/2	11/16	7/8	1 3/16
1.40	96	1/2	5/8	13/16	1 1/8
1.50	89	7/16	5/8	13/16	1 1/8
1.60	84	7/16	9/16	3/4	1 1/16
1.70	79	3/8	9/16	11/16	1
1.80	74	5/16	1/2	11/16	1
1.90	71	5/16	1/2	5/8	15/16
2.00	67	1/4	7/16	9/16	7/8
2.10	64	1/4	3/8	9/16	7/8
2.20	61	1/4	3/8	1/2	13/16
2.30	58	1/4	5/16	1/2	3/4
2.40	56	1/4	5/16	7/16	3/4
2.50	54	1/4	1/4	3/8	11/16
2.55	53	1/4	1/4	3/8	11/16