

FILE NAME: Quigley (QUIG)

DATE: 1937

DOC#: QUIG003

DOCUMENT DESCRIPTION: Internal Report

-----124-----
I N S U L A G

Mr Slateman said to me that the composition of Insulag as we manufactured shortly after the Power Show was approximately as follows:

30	per cent by weight of White Cement.
33	" " " " " Insulbrix Dust
27	" " " " " Clay
10	" " " " " Asbestos.

January 20 th. 1937 I screened out 860 grams of a mixture containing cement, clay, insulbrix dust, and bleat X --- at the same time I obtained 265 grams of short fibre asbestos.

The total mixture weighed 1125 grams, this was taken from a bag of Insulag brought to the laboratory by Mr. Spillane which was marked 38 pounds per cu. ft. Therefore the amount of asbestos used was 22.6 per cent of the Insulag mixture.

I mixed the 860 grams of cement, dust, clay, and bleat X with 43 grams of long fibre asbestos, or slightly more than 5 per cent of the total mix by weight. This now seems to be too much asbestos.

When mixed with water I noted the following.

1. It is a little more difficult to mix.
2. It does not ~~mix~~ cold set in 12 hours sufficient for hand.
3. " " cold set in 36 hours sufficient for handling.
4. Long fibre asbestos can not be used in the Wigley Gum.
5. " " " may not be classed as a moldable.
6. " " " with the first Insulag mixture would make a near perfect Insulbrix with less difficulty.

In the old powdered coal game I learned to change one thing at a time, then if it did not work I could change it back. But if someone changes two things at once to make an improvement, the chances ^{were} of success ~~are~~ ^{are} small, and re-establishing the first conditions by changing back were improbable.

Content.

The block of Insulag made with the 5 per cent long fibre Asbestos is now in the furnace being dried at 200°F for four hours. It was placed in the furnace 40 hours after it was molded.

---132---

I N S U L A G

The screen analysis of the Asbestos used in the Insulag weighing 38 pounds per cu ft. which Mr Opillane delivered to the laboratory January 20 th. 1937 is as follows:

Weight 2 grams on 8 mesh screen	
" 14 "	" 10 "
" 15 "	" 20 "
" 3 "	" 40 "

This can not be consider long fibre Asbestos.

The Insulag made according to page No. 131 using the 38 pound per cu ft. mixture of Insulag removing 22.8 per of the dust asbestos and replacing it with 5 per cent long fibre.

The block when set and dried at a maximum of 300 to 600°F weighed 34 lbs per cu ft.

I N S U L A O

Messr's Knote, Waugh, Sleteman, Spillane and Contant.

By weight	27½	per cent of Cement
	10	" " "Ambestos
	27½	" " "Clay
	32½	" " "Insulbrix Dusts

We ~~XXXXX~~ screened a sample of the standard Insulag found in the Gillespie Laboratory and that showed over 22 per cent of Asbestos. Mr. Vaugh suggested that we go to the Old Bridge plant and mix up a batch of Insulag for comparison, we therefore mixed;

20 lbs	of	Asbestos	per cent by weight	10%
45 "	"	Coarse Insulbrix Dust	" " " "	32½%
20 "	"	fine " "	" " " "	
55 "	"	Cement	" " " "	27½%
60 "	"	CLAY	" " " "	30 %
<u>200 "</u>	"	<u>INSULAG mixture</u>		<u>100 %</u>

7a then went to the Gillespie Laboratory where we made a screen test, by screening out the Asbestos which when weighed showed over 22 per cent. It was obvious that some fine dust adhered to the tiny damp fibres of Asbestos. THIS ANSWERED OUR QUESTION, AND SHOWED THAT THE STANDARD FORMULA HAD BEEN TESTED---THIS BEING SO WE MAY NOW DETERMINE THE RESULTS TO BE OBTAINED WITH LONG FIBRE ASBESTOS.

Tues. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31.

I N S U L A G

MADE WITH 5 PER CENT MEDIUM TO LONG FIBRE ASBESTOS

ACCORDING TO PAGE 131.

COMPARATIVE HEAT FLOW:

Comparative heat flow using conductivities determined by the Quigley N.Y. Laboratory for Insulbrix 2600 as a base.

Testing Insulbrix 2600 weight 37 lbs per cu.ft.

Testing Insulag containing 5 per cent long fibre Asbestos weight 33 lbs/c

FURNACE INSIDE °F		LEFT SIDE INSULAG ABOVE MENTIONED °F	RIGHT SIDE INSULBRIX 2600 °F
1300	water	188	188
1300	water	180	125
1375	water	165	150
1500	water	170	200
1650	water	176	250
1750	NO WATER	190	300
1900		255	400
2000		328	500
2000		416	600
2150		508	700
2200		608	800

COMPARATIVE THERMAL CONDUCTIVITIES.

CONDUCTIVITY IN B.T.U./SQ.FT./INCH THICK/ DEGR F °F/ HOUR.

MEAN TEMPERATURE BY QUIGLEY OF REFRACTORY INSULBRIX 2600	DETERMINATION BY QUIGLEY	DETERMINATION BY QUIGLEY	DETERMINATION BY QUIGLEY (NOT INSULAG ABOVE)
500°F	1.400	0.58	about .50
1000°F	1.78	0.70	0.63
1500°F	2.10	0.84	1.08

I N S U L A G

MADE WITH 5 PER CENT MEDIUM TO LONG FIBRE ASBESTOS

ACCORDING TO PAGES 131-134

After testing for conductivity the sample used shrunk a little so that the weight and conductivity increased from 33 lbs to 37 lbs.

Comparative heat flow using conductivities determined by the Quigley N.Y. Laboratory for Insulbrix 2600 as a base.

Testing Insulag Made with 5 per cent long fibre Asbestos weight 37 lbs o

Testing Insulbrix 2600 weight 37 lbs per cu.ft.

FURNACE INSIDE	LEFT SIDE INSULAG MENTIONED ABOVE	RIGHT SIDE INSULBRIX 2600
1500°F	90°F	100°F
1425	108	125
1325	128	150
1600	143	175
1850	280	350
1900	320	400
2000	408	500
2080	500	600
2150	588	700
2200	675	800

The sample was 1/16 th thinner.

Comparative Thermal Conductivities:

Conductivity in B.T.U./ SQ.FT./INCH THICK/DEGREE °F/HOUR.

MEAN TEMPERATURE OF	DETERMINATION BY QUIGLEY OLD INSULBLOX	DETERMINATION BY QUIGLEY INSULAG	DETERMINATION BY QUIGLEY INSULAG AS ABOVE
500°F	0.79	0.58	0.87
1000°F	0.99	0.70	2.01
1500°F	1.16	0.84	1.32

1. THE NEW INSULAG CAN NOT BE USED IN QUIGLEY GUN

2. " " is more difficult to handle and mold.

3. " " is not as good insulator

4. " " will probably cost more.

A NEW INSULBLOX MADE ACCORDING TO THE ABOVE WOULD BE NEAR PERFECT

1. " " with low fibre asbestos would weigh 32 lbs per cu.ft.

2. " " would have about the same insulating value as present.

3. " " would be strong, flexible, and would stand shipment.

4. " " if cracked would not break in two pieces but would hang.

5. " " would be cheaper to manufacture.

6. " " could be made to equal Navy Specifications.

7. " " must be made as the present one after being heated will

slack in air and fall, or crumble.

8. " " would be easier to manufacture, not tricky.

I N S U L A C 13

COMPOSITION BY WEIGHT:

24.1%	225	grams	of	Coarse	Insulbrix	Dust
10.7%	100	"	"	Fine	"	"
29.5%	275	"	"	Cement	"	"
32.2%	300	"	"	Clay	"	"
3.3%	31.5	"	"	Medium Length Fibre	Asbestos.	"
99.8%	931.5					

Mixed with 600 grams of water.

Allowed to set 18 hours, then dried slowly until a temperature of 900°F was reached.

Shrinkage at 900°F none.

"	"1000°F	None.
"	"1200°F	None
"	"1400°F	None. 1/32 in in a length of 7-ins.
"	"1500°F	1/8 then " " "7"
"	"1800°F	3/16ths-in " " "7"

Weight per cu.ft. 39 pounds.

Samples dried and burned are rather sandy probable due to the short period of time allowed for cold setting, also the strength likewise has been impaired.

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INSULAG & INSULBLOX

MADE WITH LEHIGH HIGH EARLY STRENGTH GRAY PORTLAND CEMENT.

260	grams of coarse Insulbrix dust per cent by weight	26%
110	" " Fine " " " "	11%
290	" " Lehigh High Early Cement " " "	29%
288	" " Mono-line Clay " " "	28.8%
49	" " Medium Long Fibre Asbestos " " "	4.9%
4	" " AL " " "	0.4%
<u>998</u>		<u>99.8%</u>

Mixed with 750 grams of water, or 75 per cent by weight.

Allowed to cold set 72 hours

Dried at 950°F.

Trimmed and weighed 32 pounds per cu.ft.

The long fibre added little to the appearance.

The Gray cement worked equally as well and came out almost WHITE.

Placed in furnace with one end exposed to the air the same as might be found in practice. the inside end was coated with Insulith.---It was heated to 1900°F or 1850°F.

Sample handed to Mr. Gugley to day February 2nd.1937.

INSULITH.

Silicate of Soda into which is mixed fine powdered Insulbrix dust to a paste consistancy; in which state it can be put in cans like Hytempite and sold.

When used it should be mixed with about 25 per cent by volume of hot water for a surface coating. Mix 50 per cent of hot water and pour over surfaces if it is desire to add strength to the surface particularly concrete which may have become sandy or dusty because of heating to 1800°F. Used in this manner it actually increases the strength of the article treated.

Insulith applied to Insulblox sprayed on or applied with brush (it is not perfect but best will dry in one hour, after which time Insulag can be applied, and far the water in the Insulag will not be absorbed into the Insulblox. therefore, it will expand and acquire maximum thickness and consequently greatest insulating properties.

This idea is not new because Hytempite has been recommen for coating brick and other surfaces to prevent water being absorbed when Hearth-crete; Cast-Refract or Insulcrete is poured or molded over dry surfaces.

The Innovation of INSULINE products demands a similar material to Hytempite to be used for general purposes ~~thruout~~ for repairs, patches, ~~gun~~ Quigley gun applications, used hot or cold surfaces Insulith composition can be developed to meet this necessity.

NEW GRAY INSULAG AND INSULBLOX FEB. 2- 1937.

Short Fibre Asbestos with Lehigh High Early Strength Cement. using 100 per cent by weight of water.

Composition by weight:-

225	grams	of Coarse Insulbrix Dust	22½%
100	"	" Fine "	10 %
275	"	" Lehigh Early Stg. Cement	27½% <i>verified</i>
300	"	" Mono-Line Clay	30 %
100	"	" Short Fibre Asbestos	10 %
4	"	" AL	0.4%
1,004	"	" Composition	100% + 0.4%

Water 1,000 grams.

Expansion 60 per cent in one hour.

Probable weight per cu.ft. 30 lbs.

Used as Insulag or Insulblox probable coverage 1-in thick per 100 lbs of Composition/ 40 square feet.

Insulag is a 100 per cent better Insulator than Vermiculite-Therm O Flax etc. Vermiculite covers 70 sq.ft. per 100 lbs therefore same price per lb Insulag initial cost is 80 per cent that of Vermiculite.etc.

Aluminum powder mixed with Lumino 9 weeks age has not lost brilliancy.

INSULBLOX & INSULAG

February 7th. 1937.

Insulag and Insulblox made according to formula by Mr. Knets when ~~mixtures~~ mixed with 100 per cent by weight of water, then allowed to air set one week, then dried in the furnace at 800°F though not completely dry weighed 26 lbs. 13 oz per cu. ft.

When tested for insulating value, it had insulating properties 100 per cent greater than any competitive material, and sustains the insulating values already established for Insulag but is very much better than those used for Insulblox. Because Insulag and Insulblox are now made according to the same formula.

Copy to Mr. Quigley
Mr. Knets
" Melham
" McPadden
" Gischel

Copy to Mr. E. H. Egan
Mr. Egan
Mr. Egan
Mr. Egan
Mr. Egan

INSULAG and INSULBLOX

Mr. Sletten received from Mr. Egan a split sample of INSULBLOX as they are now manufactured. This was weighed and tested for thermal conductivity. The result are so remarkable that this type may be held in reserve. for up-to-date sales data use that which was handed to you revised today showed on pages 108 & 109 Feb. 11 th 1937.

COMPARATIVE HEAT FLOW
The comparative heat flow using conductivities determined by the Quigley N.Y. Laboratory for Insulbrix 2600 as a base
Testing Insulbrix 2600 weighing 37 lbs per cu.ft.

Testing Insulag and Insulbrix weighing 37 lbs per cu.ft.		37	
FURNACE		LEFT SIDE	RIGHT SIDE
INSIDE		INSULAG and INSULBLOX	INSULBRIX 2600
		INSIDE	INSIDE
1.375	moisture	100	100
1.400	"	150	125
1.450	"	160	150
1.500	xxxxxx	200	300
1.720		270	400
1.900		360	500
2.040		450	600
2.120		540	700
2.200		625	800
2.340		665	850

NOTICE INSULAG AND INSULBLOX TESTED AT 2340°F AND MAINTAINED INSULATION PROPERTIES.

COMPARATIVITY THERMAL CONDUCTIVITIES.

CONDUCTIVITY IN B.T.U./SQ.FT./INCH THICK/DEGREE °F/ HOUR.

MEAN TEMPERATURE °F	DETERMINATION BY QUIGLEY BRICK	DETERMINATION BY QUIGLEY BLOCK & LAGGING	DETERMINATION BY EAGLE LAGGING	DETERMINATION BY THERMO-FLUX LAGGING
500°F	1.40	0.48.55	0.74	0.80
1.000°F	1.75	0.63.26	0.86	1.23
1.500°F	2.10	0.84.14	1.800	1.90
Service Temp °F 2600		2,200		near 1800

INSULAG & INSULBLOX are ~~much~~ as good insulators as 85% magnesia and therefore should be recommended for low temperature insulation. also 100 per cent better insulating properties than Vermiculite and Therm-O-Flake. 20 per cent better insulator than Superox block. and 37 per cent better than Eagle #66
INSULAG AND INSULBLOX ARE DURABLE THESE OTHERS MENTIONED ARE NOT: 85% magnesia disintegrates under living room conditions; Superox begins to shrink and weaken with each application of temperature; Stiet-Rite, Eagle, 48 Insulations, Vermiculite, etc will not stand vapor steam or water, they are very fragil.

INSULAG AND INSULBLOX HAVE A THERMAL HEAT STORAGE COMPARED WITH FIRE BRICK FOR SAME INSULATING EFFECT APPROXIMATING 1/80 th.

INSUL-G USED OVER INSULBLOX Copies to Hushen ✓

It has been found that when Insulog is plaster over Insulblox that the Insulog will not expand because the Insulblox absorbs the water too quickly.

- 1.--Insulog on Insulblox there is little or no expansion, there is however a good bond and set.
- 2.--Insulog plaster^{ed} on Insulblox that had previously been coated with a brown material taken from Mr. Quigley's desk did not improve expansion very much, and after drying there was no bond.
3. Insulog plaster^{ed} on Insulblox that had previously been coated with a thin mixture of Sodium Silicate and Insulbrix dust was no better than number two.
4. Insulog plastered on Insulblox that had previously been well coated with a material prepared by Mr. Hote and labeled "Mentonite" allowed the water to be absorbed by the Insulblox and there was little ~~no~~ improvement.

The matter of bonding Insulog to Insulblox is one that requires more study and should be done soon because Insulog plaster over Insulblox will not be a good insulator and the coverage will be reduced one third.

INSULAG K FACTOR

<u>Mean Temp.</u>	<u>Factor K</u>	<u>Mean Temp.</u>	<u>Factor K</u>	<u>Mean Temp.</u>	<u>Factor K</u>
500° F.	.5600	705° F.	.6174	905° F.	.6734
505° F.	.5614	710° F.	.6188	910° F.	.6748
510° F.	.5628	715° F.	.6202	915° F.	.6762
515° F.	.5642	720° F.	.6216	920° F.	.6776
520° F.	.5656	725° F.	.6230	925° F.	.6790
525° F.	.5670	730° F.	.6244	930° F.	.6804
530° F.	.5684	735° F.	.6258	935° F.	.6818
535° F.	.5698	740° F.	.6272	940° F.	.6832
540° F.	.5712	745° F.	.6286	945° F.	.6846
545° F.	.5726	750° F.	.6300	950° F.	.6860
550° F.	.5740	755° F.	.6314	955° F.	.6874
555° F.	.5754	760° F.	.6328	960° F.	.6888
560° F.	.5768	765° F.	.6342	965° F.	.6902
565° F.	.5782	770° F.	.6356	970° F.	.6916
570° F.	.5796	775° F.	.6370	975° F.	.6930
575° F.	.5810	780° F.	.6384	980° F.	.6944
580° F.	.5824	785° F.	.6398	985° F.	.6958
585° F.	.5838	790° F.	.6412	990° F.	.6972
590° F.	.5852	795° F.	.6426	995° F.	.6986
595° F.	.5866	800° F.	.6440	1000° F.	.7000
600° F.	.5880	805° F.	.6454	1005° F.	.7014
605° F.	.5894	810° F.	.6468	1010° F.	.7028
610° F.	.5908	815° F.	.6482	1015° F.	.7042
615° F.	.5922	820° F.	.6496	1020° F.	.7056
620° F.	.5936	825° F.	.6510	1025° F.	.7070
625° F.	.5950	830° F.	.6524	1030° F.	.7084
630° F.	.5964	835° F.	.6538	1035° F.	.7098
635° F.	.5978	840° F.	.6552	1040° F.	.7112
640° F.	.5992	845° F.	.6566	1045° F.	.7126
645° F.	.6006	850° F.	.6580	1050° F.	.7140
650° F.	.6020	855° F.	.6594	1055° F.	.7154
655° F.	.6034	860° F.	.6608	1060° F.	.7168
660° F.	.6048	865° F.	.6622	1065° F.	.7182
665° F.	.6062	870° F.	.6636	1070° F.	.7196
670° F.	.6076	875° F.	.6650	1075° F.	.7210
675° F.	.6090	880° F.	.6664	1080° F.	.7224
680° F.	.6104	885° F.	.6678	1085° F.	.7238
685° F.	.6118	890° F.	.6692	1090° F.	.7252
690° F.	.6132	895° F.	.6706	1095° F.	.7266
695° F.	.6146	900° F.	.6720	1100° F.	.7280
700° F.	.6160				

INSULAG K FACTOR

Mean Temp.	Factor K.	Mean Temp.	Factor K
1105 F	.7294	1305 F	.7854
1110 F	.7308	1310 F	.7868
1115 F	.7322	1315 F	.7882
1120 F	.7336	1320 F	.7896
1125 F	.7350	1325 F	.7910
1130 F	.7364	1330 F	.7924
1135 F	.7378	1335 F	.7938
1140 F	.7392	1340 F	.7952
1145 F	.7406	1345 F	.7966
1150 F	.7420	1350 F	.7980
1155 F	.7434	1355 F	.7994
1160 F	.7448	1360 F	.8008
1165 F	.7462	1365 F	.8022
1170 F	.7476	1370 F	.8036
1175 F	.7490	1375 F	.8050
1180 F	.7504	1380 F	.8064
1185 F	.7518	1385 F	.8078
1190 F	.7532	1390 F	.8092
1195 F	.7546	1395 F	.8106
1200 F	.7560	1400 F	.8120
1205 F	.7574	1405 F	.8134
1210 F	.7588	1410 F	.8148
1215 F	.7602	1415 F	.8162
1220 F	.7616	1420 F	.8176
1225 F	.7630	1425 F	.8190
1230 F	.7644	1430 F	.8204
1235 F	.7658	1435 F	.8218
1240 F	.7672	1440 F	.8232
1245 F	.7686	1445 F	.8246
1250 F	.7700	1450 F	.8260
1255 F	.7714	1455 F	.8274
1260 F	.7728	1460 F	.8288
1265 F	.7742	1465 F	.8302
1270 F	.7756	1470 F	.8316
1275 F	.7770	1475 F	.8330
1280 F	.7784	1480 F	.8344
1285 F	.7798	1485 F	.8358
1290 F	.7812	1490 F	.8372
1295 F	.7826	1495 F	.8386
1300 F	.7840	1500 F	.8400

cuft wt 32.8^{lbs} weight of a 9 x 2¹/₂ x 4¹/₂ Block 1 lb 15 oz
 1000°F cuft wt 37⁶/₈ lbs " " " 9 x 2¹/₂ x 4¹/₂ " 1 lb 14 oz
 1800°F " " " 1/4 SHRINKED 8³/₄ x 2³/₁₆ x 4³/₈ " 1 lb 12 oz

INSULBLUX K FACTOR

At Various Temperatures

<u>Mean.</u> <u>Temp.</u>	<u>Factor</u> <u>K</u>	<u>Mean</u> <u>Temp.</u>	<u>Factor</u> <u>K</u>	<u>Mean</u> <u>Temp.</u>	<u>Factor</u> <u>K</u>	<u>Mean</u> <u>Temp.</u>	<u>Factor</u> <u>K</u>
500° F	.790	775° F	.900	1055° F	1.0087	1325° F	1.1005
505	.792	780	.902	1060	1.0104	1330	1.1022
510	.794	785	.904	1065	1.0121	1335	1.1039
515	.796	790	.906	1070	1.0138	1340	1.1056
520	.798	795	.908	1075	1.0155	1345	1.1073
525	.800	800	.910	1080	1.0172	1350	1.1090
530	.802	805	.912	1085	1.0189	1355	1.1107
535	.804	810	.914	1090	1.0206	1360	1.1124
540	.806	815	.916	1095	1.0223	1365	1.1141
545	.808	820	.918	1100	1.0240	1370	1.1158
550	.810	825	.920	1105	1.0257	1375	1.1175
555	.812	830	.922	1110	1.0274	1380	1.1192
560	.814	835	.924	1115	1.0291	1385	1.1209
565	.816	840	.926	1120	1.0308	1390	1.1226
570	.818	845	.928	1125	1.0325	1395	1.1243
575	.820	850	.930	1130	1.0342	1400	1.1260
580	.822	855	.932	1135	1.0359	1405	1.1277
585	.824	860	.934	1140	1.0376	1410	1.1294
590	.826	865	.936	1145	1.0393	1415	1.1311
595	.828	870	.938	1150	1.0410	1420	1.1328
600	.830	875	.940	1155	1.0427	1425	1.1345
605	.832	880	.942	1160	1.0444	1430	1.1362
610	.834	885	.944	1165	1.0461	1435	1.1379
615	.836	890	.946	1170	1.0478	1440	1.1396
620	.838	895	.948	1175	1.0495	1445	1.1413
625	.840	900	.950	1180	1.0512	1450	1.1430
630	.842	905	.952	1185	1.0529	1455	1.1447
635	.844	910	.954	1190	1.0546	1460	1.1464
640	.846	915	.956	1195	1.0563	1465	1.1481
645	.848	920	.958	1200	1.0580	1470	1.1498
650	.850	925	.960	1205	1.0597	1475	1.1515
655	.852	930	.962	1210	1.0614	1480	1.1532
660	.854	935	.964	1215	1.0631	1485	1.1549
665	.856	940	.966	1220	1.0648	1490	1.1566
670	.858	945	.968	1225	1.0665	1500	1.1583
675	.860	950	.970	1230	1.0682		
680	.862	955	.972	1235	1.0699		
685	.864	960	.974	1240	1.0716		
690	.866	965	.976	1245	1.0733		
695	.868	970	.978	1250	1.0750		
700	.870	975	.980	1255	1.0767		
705	.872	980	.982	1260	1.0784		
710	.874	985	.984	1265	1.0801		
715	.876	990	.986	1270	1.0818		
720	.878	1000	.990	1275	1.0835		
725	.880	1005	.9917	1280	1.0852		
730	.882	1010	.9934	1285	1.0869		
735	.884	1015	.9951	1290	1.0886		
740	.886	1020	.9968	1295	1.0903		
745	.888	1025	.9985	1300	1.0920		
750	.890	1030	1.0002	1305	1.0937		
755	.892	1035	1.0019	1310	1.0954		
760	.894	1040	1.0036	1315	1.0971		
765	.896	1045	1.0053	1320	1.0988		
770	.898	1050	1.0070				

Mr. Con...

**TABLE 42 - Thickness in inches required
for various outside face temperatures**

Inside Face Temperature	Approx. Outside Face Temperature - Atmosphere Still Air at 60°F.						
	200	250	300	350	400	450	500
2100°F.	3.8"	3.25"	2.1"	1.65"	1.35"	.70"	.62"
2000°F.	4.6"	2.7"	1.7"	1.15"	.85"	.62"	.47"
1800°F.	4.05"	2.25"	1.4"	.94"	.62"	.43"	.36"
1600°F.	3.5"	1.87"	1.12"	.73"	.5"	.30"	.27"
1400°F.	2.8"	1.45"	.82"	.5"	.35"	.25"	.19"
1200°F.	2.5"	1.1"	.63"	.4"	.25"	.175"	.125"
1000°F.	1.75"	.77"	.4"	.22"	.15"	-	-
800°F.	1.1"	.5"	.25"	.14"	-	-	-

TABLE 43

2100°F.	7.7"	4.5"	2.8"	1.85"	1.4"	1.05"	.8"
2000°F.	6.5"	3.8"	2.4"	1.60"	1.15"	.85"	.65"
1800°F.	5.6"	3.2"	1.95"	1.3"	.9"	.65"	.5"
1600°F.	4.9"	2.6"	1.6"	1.00"	.7"	.5"	.35"
1400°F.	4.1"	2.1"	1.15"	.71"	.45"	.32"	.25"
1200°F.	3.2"	1.6"	.83"	.53"	.34"	.23"	.16"
1000°F.	2.5"	1.1"	.55"	.32"	.19"	.12"	-
800°F.	1.6"	.69"	.35"	.19"	.11"	-	-