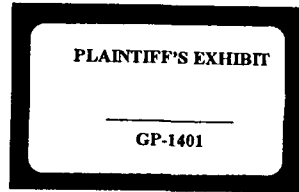


~~WASTE~~
WASTE



COMPETITIVE SURVEY

READY MIX JOINT CEMENT PRODUCTS

For: Mr. E. B. Hollingsworth
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Objectives:

To evaluate competitive ready mix products in order to determine the competitive position of Georgia Pacific ready mix.

Summary:

Georgia Pacific ready mix containing asbestos is equal to or better than all other samples tested in nearly all tests. Our asbestos - free material, however, compares poorly in all tests except shrinkage and bond. It may be slightly better in low viscosity body also.

COMMENTS

Viscosity

The largest problem in connection with asbestos - free ready mix would seem to be viscosity control at this time. All samples were poor in this respect when compared with an asbestos - containing ready mix, with Georgia Pacific material being about in the middle. While Georgia Pacific material performs as poorly as others in regards to energy input, and is more sensitive to water additions, the low viscosity workability is marginally better.

Freeze/Thaw

Our product appears to be quite competitive through one freeze - thaw cycle, showing better maintenance of bonds than any other and average viscosity change and separation.

Bonds

Georgia Pacific ready mix has the best bond of all samples, showing better bond at both in - pail and machine viscosities, as well as the only cold bonds. We could, however, improve the bond of our asbestos - free product somewhat.

Cracking

Georgia Pacific products have both the best and worst results in this area. Asbestos - type material performed very well, while our asbestos - free ready mix is in definite need of improvement.

Open Time

Again, we have both the highest and lowest scores, with our asbestos - free material again in need of improvement.

Water Resistance

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Our asbestos material received top mark while Georgia Pacific ✓
asbestos - free ready mix was only marginal.

Shrinkage

Both of our products appear to be adequate, with very good results on our asbestos - free material. This, however, was to be expected in view of the high amount of cracking of this sample.

Workability

As a purely subjective test, I feel that our asbestos ready mix performs very well here, and our asbestos - free is adequate, with the largest problem being a large amount of air entrapment in the asbestos - free. Both Gold Bond and Quality had a slightly "sticky" feel which I feel detracted from these products. Applicators also commented that these two products were "gummy". USG topping also worked quite well.

GLOSSARY OF TESTING PROCEDURES

Viscosity Measurements

All measurements were taken on a Brabender Visco - Corder set at 79 RPM. "A" viscosity is approximately the highest reading of the sample, taken when the un-mixed sample was initially applied to the machine. "B" viscosity is the stabilized reading of an un-mixed sample. "C" viscosity is the stabilized reading of a sample which has been mixed very vigorously, simulating the action of an electric drill. "D" viscosity is the stabilized reading of a sample which has been mixed with 5% water.

Freeze / Thaw cycle

Samples were conditioned at -1 degree F. for 24 hours and then allowed to thaw at room temperature.

Bonds

"A" bonds were at in - pail viscosity. "B" bonds were at a machine viscosity of 400 BU. Room bonds were taken at room temperature, while cold bonds were applied, then conditioned at 40 degrees F. for 24 hours before being pulled. All cold bonds were pulled again at room temperature and all samples showed about the same results as when they were pulled while still cold.

Crack Tests

"A" tests were at in-pail viscosity, while "B" tests were taken again at a machine viscosity of 400 BU. All tests were taken according to plant testing procedure number 37.

Open Time

Ready mix was applied to a board .025" thick and observed periodically until it could no longer be worked. The figure given is in minutes from application.

Water Resistance

Ready mix was again applied to a board .025" thick and let dry. One drop of water was placed on the dried sample and allowed to remain for two minutes, when the excess was picked up. A loading of 501 grams was applied over an area of 20 square mm on the drop of water and the resulting depression measured in thousandths of an inch. By this method, the higher the number, the lower the water resistance.

Density

Density figures are in pounds per gallon.

Net Volume

Volume figures are in gallons.

Shrinkage values were measured off of the "A" and "B" crack tests, at in-pail and 400 BU viscosities.

All sampling, testing, and reporting was done by Dan Harmon
at the Milford plant.



D.D. Harmon

Ready Mix Sample	NPN Viscosity	NPN Viscosity	NPN Viscosity	NPN Viscosity	Thaw / Freeze Cycle				Room Bonds A/B	Cold Bonds A/B	NPN Crack	Open Time	Water Resistance	Density	Per Cent Solids	Contains Asbestos	Net Weight	Net Volume	NPN Shrinkage	NPN Shrinkage
					Bond Strength	Viscosity	Viscosity	Separation												
USC Topping	900	625	555	260	0	540	495	good	0/0	0/0	2	22	6	13.7	69.2	no	63.75	4.65	34.1	39.8
Gold Bond All Purpose	700	510	420	200	20	440	400	poor	75/20	0/0	2	18	4	12.5	64.4	no	61.5	4.9	33.0	42.0
Quality All Purpose	1000+	580	425	200	40	515	375	poor	90/60	0/0	2	15	4	13.0	66.7	no	63.25	4.87	29.5	36.4
GP All Purpose	580	540	520	290	95	540	490	fair	100/ 100	100/ 95	1	25	3	13.3	69.4	yes	62.25	4.69	34.1	37.5
GP All Purpose Asbestos Free	900	670	530	220	98	540	500	fair	100/ 100	100/ 50	4	16	5	13.2	68.6	no	63.50	4.80	31.8	40.9

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