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RES. REPORT
#77

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INVESTIGATION OF
RAPID MEMBRANE
CURING COMPOUNDS

by
B. Fodeck

Research Project 45 C-28

Research Laboratory
Testing and Research Division
Report R-77
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INVESTIGATION OF KAPCO MEMBRANE CURING COMPOUNDS

Samples of three membrane curing compounds marketed by the Keystone Asphalt Products Company of Chicago were transmitted to the Research Laboratory by H. C. Coons, Deputy Commissioner, for investigation. These materials were labeled R-26, R-40, and R-50.

Investigations of the Materials included the following studies:

1. Color, including permanence.
2. Total solids, percent. A.S.T.M. Designation D 154.
3. Nature of residue.
4. Permeability of residue to moisture. A.S.T.M.
Designation C 156
5. Specific gravity.
6. Miscellaneous studies such as uniformity of film,
reproducibility of effects, ease of application, etc.

Results of the investigation are shown in the following tables:

TABLE I

Physical Properties of Tapes Membrane Curing Compounds

Materials	Specific Gravity	*Solids Percent	Nature of Residue	Color of Residue
R-26	0.804	31.5	Soft Wax	Permanent Pink
R-40	0.925	41.3	Soft Wax	Permanent Dk. Brown
R-50	1.042	51.2	Soft Wax	Permanent Brown

*By A.S.T.M. Designation D 154

TABLE II

Miscellaneous Properties of Tapes Membrane Curing Compounds

Materials	Uniformity of Film	Ease of Application	Reproducibility of Effects
R-26	Non-uniform	Satisfactory	Good
R-40	Non-uniform	Satisfactory	Low
R-50	Non-uniform	Unsatisfactory*	Low

* Difficult to Spray (too "thick")

TABLE III

A.S.T.M. Moisture Permeability of Epoxy Membrane Curing Compounds

Loss in Weight of A.S.T.M. Mortar Samples in Percent*

Time Days	E-26 Trial			R-40 Trial						P-50 Trial			
	1	2	3	1	2	3	4	5	6	1	2	3	
1	4.0	3.4	3.1	0.7	2.8	3.9	0.9	3.1	1.4	3.1	2.6	1.9	
2	5.1	6.6	7.4	1.4	5.5	7.6	1.9	6.0	2.2	4.6	3.9	3.0	
3	11.4	10.7	9.7	2.0	7.8	10.2	2.6	6.4	3.2	5.7	4.9	3.9	
4	13.0	11.9	11.3	2.5	9.3	11.0	3.2	7.6	4.4	6.2	5.7	4.9	
5	13.9	13.1	12.6	3.3	10.6	13.4	4.0	4.0	5.0	7.1	6.3	5.4	
6	14.8	14.2	13.9	3.7	11.8	14.9	4.9	9.9	5.7	7.8	7.1	6.3	
7	16.0	14.9	15.0	4.3	13.0	16.1	5.6	10.8	6.4	8.5	7.7	6.7	
Ave., 7 days:	15.3			5.4									7.6

* Using Furon Standard Cement and Graded Ottawa Sand

Review of Results

All three products have evidently been made by cutting back a wax material with a volatile solvent. From previous experience it is indicated that such compounds are not reliable due to the non-uniform deposition of film associated with variable moisture losses. This fact is clearly illustrated by the erratic moisture retention results of sample B-40.

Product B-26 has a solid content less than 40 per cent.

Product B-50 has a satisfactory water retention factor but is very viscous and therefore it is believed that it could not be handled with any degree of satisfaction either by hand or with mechanical spray equipment.

All three products contain a coloring material which is relatively permanent. This is objectionable from the standpoint of pavement discoloration.