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MEMORANDUM

Mr. Chamberlain- BB
Mr. Weed- MB
Mr. Reynolds- H
Mr. Kemmler- HL
Mr. Woods- BC
Mr. Niese- CD
Mr. Callan- BD
Mr. Hadfield- [illegible]

In Reply to _____ *Date* 3/4/59 *From* PBL *To* _____

Subject KOPPERS CO. - DYLITE PANEL MEETING

PLAINTIFF'S EXHIBIT

BIR-921

Present:

Koppers Co. - Messrs. Edberg, Fullerton, and Lenz

Bird & Son - Messrs. Chamberlain, Weed, Reynolds, Woods, Callan, Niese, Sallie, Hadfield, and Olson

On February 24, 1959 the Koppers Company presented a very interesting and informative program concerning the development of Dylite (Brand name for Koppers expanded polystyrene) panels. Development of these polystyrene core panels was started in 1955 and includes a very thorough testing program at RPI. Skins for these panels were limited to commonly available materials such as plywood, cement-asbestos, hardboard, etc. In densities of one pound per cubic foot, Dylite cost 3¢ per board foot compared with 15 - 20¢ for urethane foam, with phenolic somewhere in between these prices. The phenolic has certain important disadvantages while urethane, at present, cannot be commercially produced on a steady schedule and maintain one pound per cubic foot density.

Tests on roof panels using 1/4" plywood skins and a 2 1/2" Dylite foam core showed a minimum safety factor of 5 when subjected to loading and using a 50#/sq. ft. design criteria with a 1/360 deflection over an 8 ft. span. Wall panels using 1/4" plywood skins and 2" of foam core showed 6,000#/lin. ft. in a use where 500# is sufficient.

Koppers has had to develop equipment to make 1#/cu. ft. polystyrene foam and also to fabricate the panels. They have patent applications on this equipment. A Rodman pre-expander must be used to obtain 1#/cu. ft. density foam. A Waltham firm is licensed to make this machine. An automated press where panels are "foamed in place" with 40# steam is also used in fabricating Dylite panels. Industron in Needham is licensed to manufacture this press.

Koppers intimated that Dylite panels could compete with "in place" costs of:

40¢/sq. ft. dry wall interior partition
60¢/sq. ft. exterior wall
70¢and up/sq. ft. roof panel

39068 9 58 24M R O 950

MEMORANDUM

*In Reply to*_____ *Date*_____ *From*_____ *To*_____

*Subject*_____ - 2 -

The most important factor in cost of Dylite panels is the skin material. 80 - 85% of the cost of a Dylite panel is raw material cost.

There are three types of companies which Koppers feels could make panels. They are 1) prefabricators, 2) building materials manufacturers, and 3) independents. Estimated cost for equipment to make panels would be $100,000+ as a minimum. A large amount of working capital is necessary. A transportation radius of 150 - 200 miles for these panels would be feasible. Koppers offers their knowledge and experience in return for a 10 year contract for purchase of 80% of polystyrene requirements. They limit the number of manufacturers in an area rather than offer exclusive territories.

Commercial applications of Dylite panels include a development in North Detroit where the interior partitions of 40 homes in the $15,000 price range were Dylite panels with mahogany facings. These were 2" thick panels and batten joints were used. There were no adverse comments about these partitions from the public.

Slides were shown of the most important application of Dylite panels - the 1958 NAHB Research House in South Bend, Indiana. This house is completely panelized with skins of redwood plywood, interior plywood, gypsum, and crezon faced plywood. Exterior wall panels were 2' and/or 4' x 8' x 3" weighing approximately 100#/panel. Roof panels were 4' x 18' x 4" and were 1/4" plywood skins with 3 1/2" of Dylite foam for core. These panels weigh 190#/panel. The carport roof was composed of 16' long panels and was covered with a 5 mil urethane coating at a reported cost of 7¢/sq. ft. This is a very steep pitch installation. The roof deck on the house has a 2" pitch and employs a patterned aluminum sheet covering.

FHA has approved two Dylite panels. One is for non-load bearing curtain wall application and the other is the structural roof panel with 1/4" plywood faces. Pending acceptance is exterior wall load bearing panels.

In conclusion, Koppers made a very effective and interesting presentation on Dylite panels. Their representative adequately handled all questions. In 1959 and early 1960 there will be

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MEMORANDUM

*In Reply to*_____ *Date*_____ *From*_____ *To*_____

*Subject*_____ - 3 -

three firms manufacturing Dylite panels. One in California; one in the mid-west; and the third, which is not definite as of this moment, would be in southern New Jersey. Koppers feels that the code situation will gradually improve. Bird & Son should very definitely keep a close watch on Dylite panel developments.

NDO/rp