

Complaint

91 F.T.C.

IN THE MATTER OF

REICHHOLD CHEMICALS, INC.

ORDER, ETC., IN REGARD TO ALLEGED VIOLATION OF THE
FEDERAL TRADE COMMISSION ACT AND SECTION 7 OF THE
CLAYTON ACT

Docket 9076. Complaint, March 11, 1976 — Final Order, Feb. 22, 1978

This order, among other things, requires a White Plains, N.Y. manufacturer and distributor of various products, including fiberglass reinforced panels (frp panels) to divest itself completely, within one year from service of this order, of The Corrulux Corporation, a Houston, Tex. producer of frp panels. Further, the firm is prohibited, for a two-year period, from soliciting (for the purpose of selling fiberglass reinforced plastic panels) those customers who had purchased such panels from Corrulux during the year prior to its acquisition by RCI. Additionally, the order prohibits RCI from acquiring, for ten years, any domestic company engaged in the production, sale or distribution of frp panels.

Appearances

For the Commission: *Charles W. Corddry, III, Steven A. Newborn and Max C. Dorian.*

For the respondent: *John Boyer and Adrian C. May, Jr., Cadwalader, Wickersham & Taft, New York City and Washington, D.C.*

COMPLAINT

The Federal Trade Commission having reason to believe that Reichhold Chemicals, Inc., a corporation subject to the jurisdiction of the Commission, has acquired Corrulux Corporation, a corporation subject to the jurisdiction of the Commission in violation of Section 7 of the Clayton Act, as amended, (15 U.S.C. 18) and Section 5 of the Federal Trade Commission Act, as amended, (15 U.S.C. 45), and that a proceeding in respect thereof would be in the public interest hereby issues this complaint, stating its charges as follows:

I. Respondent

1. Respondent, Reichhold Chemicals, Inc. (hereinafter "RCI") is now and was at the time of the acquisition a publicly held corporation chartered and operating under the laws of the State of Delaware, with a principal place of business at the RCI Building, 525 North Broadway, White Plains, New York.

2. RCI is a leading manufacturer and marketer of a wide range of

synthetic resins and industrial chemicals as well as the nation's largest producer of fiberglass-reinforced plastic panels.

3. In 1973, RCI had revenues in excess of \$294 million and net income in excess of \$11 million. In that year RCI was the 448th ranked industrial corporation in the Fortune 500.

4. In 1974, RCI had revenues in excess of \$480 million, assets in excess of \$229 million and net income in excess of \$24 million. In that year RCI was the 347th ranked industrial corporation in the Fortune 500. [2]

5. At all times relevant herein, RCI sold and shipped its products in interstate commerce throughout the United States and was and is now engaged in commerce as "commerce" is defined in the Clayton and Federal Trade Commission Acts.

II. *Corrulux Corporation*

6. Prior to the acquisition hereinafter set forth, Corrulux Corporation (hereinafter "Corrulux") was a corporation chartered and doing business under the laws of the State of Texas with a principal place of business located at 410 Holmes Road, Houston, Texas.

7. In 1973, Corrulux had revenues of approximately \$3 million and assets in excess of \$1.2 million.

8. Corrulux was, prior to the acquisition, hereinafter set forth, an independent and profitable company. In 1973 substantially all of Corrulux's sales were of fiberglass-reinforced plastic panels.

9. At all times relevant herein, Corrulux sold and shipped its products in interstate commerce throughout the United States, and was and is now engaged in commerce as "commerce" is defined in the Clayton and Federal Trade Commission Acts.

III. *The Acquisition*

10. On or about August 19, 1974, pursuant to an agreement between RCI and Corrulux, respondent purchased the assets of Corrulux for approximately \$675,000 and assumed debts of approximately \$1 million.

IV. *Trade and Commerce*

11. The relevant geographic market is the United States as a whole.

12. The relevant product market is the manufacture, and sale of fiberglass-reinforced plastic panels (hereinafter "frp panels").

13. Frp panels are light weight, predominantly translucent,

shatter-resistant building products composed primarily of polyester resins reinforced with fiberglass matting. [3]

14. In 1973, the year prior to the acquisition, total sales of frp panels at the manufacturing level were approximately \$60 million in the United States. In 1974, the year of the acquisition, total sales of frp panels at the manufacturing level were approximately \$75 million in the United States.

15. Frp panels have many different uses, some of which are, residential patios and awnings, greenhouses and the skylights of prefabricated metal buildings.

16. Before the acquisition of Corrulux there were nine major producers of frp panels accounting for over 95 percent of all frp panels sold nationally. Concentration was extremely high in 1973 with the top four and eight ranking firms accounting for over 72 percent and over 94 percent respectively. After the acquisition the top four and eight ranking firms accounted for over 77 percent and 98 percent respectively.

17. In 1973, RCI was the second ranked domestic producer of frp panels with sales in excess of \$11 million. In that year RCI accounted for approximately 18.9 percent of total domestic sales of frp panels.

18. In 1973 Corrulux was the seventh ranked domestic producer of frp panels with sales of approximately \$3 million. In that year Corrulux accounted for approximately 5.0 percent of total domestic sales of frp panels.

19. As a result of the aforesaid acquisition, RCI became the first ranking firm in the frp market, accounting for approximately 24.0 percent of total domestic sales of frp panels.

20. As a result of the aforesaid acquisition, concentration among the top four and eight firms increased from approximately 72 percent and 94 percent to approximately 77 percent and 98 percent respectively.

21. Prior to the aforesaid acquisition RCI and Corrulux were substantial and actual competitors in the manufacture and sale of frp panels.

V. *Effects of the Acquisition*

22. The effect of the aforesaid acquisition may be substantially to lessen competition or to tend to create a monopoly in the manufacture and sale of frp panels throughout the United States in the following ways, among others: [4]

(a) Substantial actual competition between RCI and Corrulux has been eliminated;

(b) The ability of RCI's competitors to compete in the manufacture,

sale and distribution of frp panels has been, and/or may be, further substantially diminished;

(c) Concentration has been and/or may be increased to the detriment of actual as well as potential competition;

(d) RCI has become the dominant producer of frp panels.

VI. *The Violation Charged*

23. The acquisition by RCI of Corrulux constitutes a violation of Section 7 of the Clayton Act, as amended, (15 U.S.C. 18).

24. The acquisition by RCI of Corrulux constitutes an unfair method of competition in commerce and an unfair act or practice in commerce in violation of Section 5 of the Federal Trade Commission Act, as amended, (15 U.S.C. 45).

INITIAL DECISION BY MORTON NEEDELMAN, ADMINISTRATIVE
LAW JUDGE

JULY 19, 1977

I

STATEMENT OF THE CASE

The complaint in this proceeding issued on March 11, 1976. It charges that respondent, Reichhold Chemicals, Inc., has violated Section 7 of the Clayton Act (15 U.S.C. 18) and Section 5 of the Federal Trade Commission Act (15 U.S.C. 45) by acquiring the assets of The Corrulux Corporation on August 19, 1974. According to the complaint, the effects of the [2] acquisition may be substantially to lessen competition or tend to create monopoly in the manufacture and sale of fiberglass-reinforced plastic panels (hereinafter frp panels) throughout the United States.

Respondent filed an answer on April 27, 1976, in which it admitted making the challenged acquisition. It also admitted certain corporate and jurisdictional facts, but Reichhold denied the substantive allegations of the complaint relating to the existence of an frp panel relevant product market and the charges respecting the alleged anticompetitive effects of the acquisition in this market. In addition, respondent said in its answer —

... that on or about October 1, 1975, the manufacturing facilities of Corrulux were shut down as a result of the fact that Corrulux's physical production facilities could not be preserved as a viable production unit without virtual replacement of such facilities. Respondent avers that at all times relevant to this proceeding, Corrulux was and is a failing company. (Answer, ¶ 25.)

In the prehearing stage both sides were allowed limited discovery, complaint counsel's requests for admissions were answered, and stipulations were filed. Upon completion of the prehearing stages, the case-in-chief began on January 17, 1977 and ended on January 28, 1977. The defense case was presented between February 28, 1977 and March 9, 1977. A hearing for rebuttal was held on April 20, 1977.¹ During the hearings all counsel were given full opportunity to be heard, and to examine and cross-examine witnesses. [3]

The record was closed on April 20, 1977. Proposed findings of fact and briefs were filed by the parties on May 20, 1977. Answering briefs were filed on June 6, 1977.

After reviewing all the evidence as well as the proposed findings and briefs submitted by the parties, and based on the entire record, I make the following findings of facts:²

¹ This unusually long interval between hearings was allowed to encourage the parties to explore the possibility of a settlement. (See Tr. 2235.)

² Proposed findings not adopted in the form proposed or in substance are rejected, as either not supported by the entire record or as involving immaterial or irrelevant matters.

The following abbreviations are used throughout in citing to the record: "Tr." (transcript of testimony); "CX" (complaint counsel's exhibit); "RX" (respondent's exhibit); CX 1, an index to complaint counsel's exhibits, contains a description of each document and the date received in evidence or rejected. The same information for respondent's exhibits appears on RX 1. CX 1 and RX 1 also indicate which exhibits are *in camera*. By the terms of my *in camera* rulings there is no limitation whatever on the public use of this material in decisions written by the undersigned, the Commission, or other reviewing authorities. (Tr. 294-96.) As I indicated on the record (Tr. 295-96) it is my intention that *in camera* status will end on January 1, 1979 when *in camera* exhibits are to be placed on the public record except for CX's 308A-C, *in camera*, which are to remain *in camera* without time limitation. (Tr. 298.)

The appearances of the witnesses were as follows: [4]

NAME	CALLED BY	TR. PAGES
Joseph S. McDermott Reinforced-Plastic Composites Institute, a Division of the Society of the Plastics Industry, Inc. (Trade Association)	Complaint Counsel ("c.c.")	223-274
Victor Alfred Maynard Filon Division of Vistron, a subsidiary of the Standard Oil Company of Ohio (Frp Panels Manufacturer)	c.c.	304-446
David A. Yundt Resolite Division of H.H. Robert- son Company (Frp Panels Manufacturer)	c.c.	452-529
Jay Paul Feder Barclay Industries, Inc. (Frp Panels Manufacturer)	c.c.	533-620
Michael Cafarchia Lasco Division of Phillips Industries, Inc. (Frp Panels Manufacturer)	c.c.	625-692
Robert E. Simpson (Former owner of Corrulux)	c.c.	702-828
Alfred B. Menzer Kemlite Corporation (Frp Panels Manufacturer)	c.c.	832-915

[9] II

FINDINGS OF FACTS

REICHHOLD AND CORRULUX

1. Respondent, Reichhold Chemicals, Inc. (hereinafter Reichhold) is a Delaware corporation with its principal place of business located at 525 North Broadway, White Plains, New York. (Complaint and Answer ¶ 1.)

2. Reichhold is a major manufacturer and marketer of a wide range of synthetic resins and industrial chemicals, as well as frp panels. (CX's 6F, J, K.)

3. In 1973, the year prior to the subject acquisition, Reichhold's total sales were \$294 million. (Complaint and Answer ¶ 3.)

4. In 1973, Reichhold's sales of frp panels were about \$12 million. These panels were produced by Reichhold's Reinforced Plastics Division at plants located in San Diego, California and Grand Junction, Tennessee. (Admissions 2, 3, CX's 305B, M, CX's 13C-E; Tr. 1891.) Frp panels are the only end-use or consumer products produced by Reichhold — basically, respondent is a manufacturer of raw materials such as the resins and chemicals used by the plastics industries. (CX's 5A-10Z-19.)

[5] Jerry G. Christopher Glasteel, Inc. (Frp Panels Manufacturer)	c.c.	920-1045
Davis Allen Marathon Metallic Building Co., a subsidiary of Marathon Manufacturing Company (Pre-engineered Metal Building Manufacturer)	c.c.	1051-1091
Roger D. Hertel IBG-Roper Industries, Inc. (Greenhouse Manufacturer)	c.c.	1093-1129
Frederick E. Reiling Fiber Glass Plastics, Inc. (Frp Panels Manufacturer)	resp.	1140-1169
David Clair Bush Idaho Chemicals Industries, Inc. (Frp Panels Manufacturer)	resp.	1170-1232
Waldo Everett Stransky Thorolyte Fiberglas, Inc. (Frp Panels Manufacturer)	resp.	1233-1279
Robert S. Morrison Molded Fiberglass Companies (Frp Panels Manufacturer)	resp.	1284-1375
[6] James Veenema Lunn Laminates, Inc. (Manufacturer of "sandwich" pa- nels)	resp.	1376-1423

(Continued)

5. Prior to the acquisition, The Corrulux Corporation (hereinafter Corrulux) was a Texas corporation with its principal place of business and manufacturing facility located at 410 Holmes Road, Houston, Texas. (Complaint and Answer ¶ 6.)

6. In fiscal 1973 (year ending June 30, 1974) Corrulux had sales of approximately \$3 million. Virtually all of Corrulux's business was derived from the sale of frp panels. (Complaint and Answer ¶ 8; CX's 3D, 307C, *in camera*; Tr. 710.) [10]

7. Prior to the Reichhold acquisition, all the stock of Corrulux

James Allemand M.C. Gill Corp. (Specialty Panels Manufacturer)	resp.	1434-1471
Robert P. McCarthy Butler Manufacturing Company (Pre-engineered Metal Building Manufacturer)	resp.	1483-1521
Charles Pope Wrisco Inc. (Distributor to Custom Awning Fabricators)	resp.	1522-1561
Edward J. Liczwek Sears, Roebuck & Co. (Chain retailer)	resp.	1580-1616
Donald M. Reynolds Aetna Plastics Co. (Distributor of plastics)	resp.	1620-1662
Vincent Pisano Reichhold Chemicals, Inc. (Comptroller)	resp.	1663-1693
Gerhard L. Schultz IBG-Roper Industries, Inc. (Manufacturer of Greenhouses)	resp.	1699-1789
[7] John F. Doherty <i>Industrial Equipment News</i> (Trade Publication)	resp.	1798-1816
Edward E. Shea Reichhold Chemicals, Inc. (Chairman of the Board)	resp.	1822-1887
Charles Frizzelle Reichhold Chemicals, Inc. (General Manager, Reinforced Plastics Division)	resp.	1888-2002
John Marshall Mitchell Cincinnati Milacron Inc. (Frp Panels Manufacturer)	resp.	2008-2029
Thomas P. Shumaker Reichhold Chemicals, Inc. (Executive Vice President)	resp.	2029-2088
Sidney Graham Winter, Jr. Yale University (Economist — expert witness)	resp.	2089-2221
James I. Sturgeon Federal Trade Commission (Economist — expert witness)	c.c.	2250-2358

[8] In addition to this formal testimony, the record contains two depositions identified as follows:

RX 83 (62 pages) Deposition of Richard R. Keller Kalwall Corporation (Frp Panels and Sandwich Panels
Manufacturer)

RX 90 (91 pages) Deposition of Maurice Horn Ornyte Division of Berdon, Inc. (Frp Panels Manufacturer)

was owned by one Robert E. Simpson. (Admission 17, CX's 305C, M; Tr. 703.)

8. On August 19, 1974, Reichhold purchased the assets of Corrulux from Simpson for \$675,000 and assumed Corrulux's liabilities of approximately \$1 million. (Complaint and Answer ¶ 10.) The assets purchased by Reichhold included cash, receivables, inventories, machinery and equipment, trucks and autos, deposits, leases, option rights, contracts and agreements, the corporation name, patents, trademarks and technology, and all other assets including intangibles. (CX 14A.)

"COMMERCE"

9. At all times relevant to this case Reichhold and Corrulux were engaged in commerce in the manufacture, sale, and distribution of frp panels as "commerce" is defined in the Clayton and Federal Trade Commission Acts. (Complaint and Answer ¶ 5; Admission 26, CX's 305D, N.)

THE GEOGRAPHIC MARKET ("SECTION OF THE COUNTRY")

10. The parties have stipulated that the relevant geographic market ("section of the country") for evaluating the Reichhold acquisition of Corrulux is the entire United States. (Admission 74, CX's 305J, O.)³ [11]

THE PRODUCT MARKET ("LINE OF COMMERCE")

11. Frp panels are building materials made mainly of polyester resin⁴ reinforced with fiberglass. (Complaint and Answer ¶ 13.)⁵ According to the complaint, the manufacture of frp panels is the only relevant product market for evaluating the effects of Reichhold's acquisition of Corrulux. Definition of the relevant product market is the threshold issue in this horizontal acquisition case, and the issue which most sharply divided the parties throughout this proceeding.

12. It is complaint counsel's position that frp panels constitute a

³ Frp panels are light and can be packaged in compact bundles for shipment at relatively low freight cost throughout the United States. They are also relatively easy to handle in a warehouse. While the frp panel producer located closest to a particular customer has a freight advantage, there is no evidence that this advantage is decisive. (See CX 3F.)

⁴ Polyester resin is a thermosetting plastic which converts from liquid to solid by the chemical reaction of heat and catalysts. Once the resin has been cured, it cannot be reformed into a liquid state. In contrast, the more expensive thermoplastic resins such as acrylics, polycarbonates, polyethylene, polystyrene, polypropylene and butyrates can be reformed by the application of heat and pressure. (Tr. 327-29.)

⁵ Other raw materials used in frp panel manufacture are styrene monomer, acrylic monomer, peroxides, filler materials, cellophane, pigments, methyl methacrylate monomer, and Tedlar. The fiberglass reinforcing material constitutes 22 to 25 percent of the panel; most of the balance is made up of polyester resin. (Tr. 309, 424, 477-78, 640-41, 835-36, 1171.)

relevant market because the product meets some but by no means all of the criteria of *Brown Shoe*⁶ in which the Supreme Court said that within broader general markets, relevant submarkets may exist for Section 7 analysis by reason of industry or public recognition, peculiar characteristics and end [12] uses, unique production facilities, distinct prices, sensitivity to price changes, and the existence of specialized vendors.

13. Respondent, on the other hand, contends that frp panels are only one of many building materials that compete against each other for use in certain applications. As respondent would have it, the production of frp has no independent economic significance and the relevant market for evaluating this acquisition should at least include aluminum panels, glass, polyethylene film, and other plastic glazing materials which can be used in the same applications as frp panels.

Physical Characteristics

14. The physical characteristics of frp panels are not in dispute. Frp panels combine lightness of weight with a high degree of tensile strength and durability. The product is rigid, shatter-resistant, unaffected by moisture or moderately high temperatures, and withstands the corrosive effects of caustics, acids, and solvents.

Frp panels can be formed into configurations which "nest" with other building materials and frp panels can be made with varying degrees of translucence (up to 95 percent light transmission) thus permitting the passage of diffused light. Frp panels cannot be made transparent because of the light deflecting quality of the fiberglass ingredient. Completely opaque frp panels are used in certain applications. (Complaint and Answer ¶ 13; CX's 122F, 190-o; Tr. 227, 329, 332-34, 455-56, 559-60, 643, 833, 944-45, 1171-72.)

15. No other single product has the same combination of physical characteristics as frp panels. (Tr. 329, 550, 944.)

16. Frp panels are produced in various weights and sizes ranging from less than three ounces per square foot to 16 ounces per square foot. The most common [13] sizes are approximately 26 to 50 inches in width, six to 16 feet in length. The surface finish of the panels can be either smooth or textured. The configuration of frp panels can be flat, corrugated, or ribbed and the panels can be produced in many different colors. (CX 190-o; Tr. 330-35, 558-60, 641-42, 833-34.)

Production Facilities

17. Frp panels have been produced by three processes: the hand lay-up, the molded press, and the continuous line methods. (Findings 18-20.)

18. Production of frp panels originated in the early 1950's with the use of the hand lay-up method in which panels were made one at a time. In this process a cellophane sheet is placed in a frame shaped to the desired configuration. A fiberglass mat (fiberglass in gauze-like form) is then placed on top of the cellophane sheet and polyester resin is poured over and through the mat. A second cellophane sheet is laid on top of the resin and fiberglass. The panel is cured in an oven and cut to the desired size. (Tr. 479-82, 524-25, 571, 848-49, 926, 1176-77, 1237-38, 1700.) Although the hand lay-up method is no longer suitable for production of large volume runs, it is still the best and sometimes the only practical method for making panels of special weights, colors, and other properties, and for limited production runs. (CX 3G; Tr. 482-85.) The hand lay-up method entails significantly higher labor and raw material costs than the continuous line process and does not produce panels of uniform thickness. (Tr. 480-81, 846-47.)

19. The press molding method is similar to the hand lay-up method; in place of the frame, however, the manufacturer uses an hydraulic press containing a matched set of metal dies mounted on the faces of the press. A fiberglass mat is placed on the lower of the two faces and polyester resin mixed with pigment and fillers is spread over the mat. The press, which is heated [14] either by electricity or by steam, is closed to start the curing process. A cured panel is made in two minutes. The dimensions of the panel are determined by the dimensions of the dies. (CX 122H; Tr. 839-40, 2016-17.) The press molding method is used exclusively by two firms, Cincinnati Milacron and Molded Fiberglass, which manufacture panels for the liner application. (Tr. 1290-91, 2010, 2016; see Findings 45-54.) In addition, both Reichhold and another producer, Kemlite, use press molding for limited production runs and for specialty items.⁷ (Tr. 838-39, 851, 926-27, 1977-78.) The molded press method produces perhaps the best panels because this method allows for strict control over thickness and color distribution. (Tr. 927-28.)

20. The continuous line process, which now predominates throughout the industry, is the only competitively feasible way to produce panels in large volume. In addition to speed of production,

⁷ Kemlite, for example, uses a press mold to make a high-priced ribbed liner panel which cannot be made on a continuous line. Sales of this product are being phased out. (RX's 15A-B; Tr. 862-63.)

the continuous line process reduces labor and raw material costs and produces products of uniform dimensions and quality. The process, which was originated by Filon in 1952, involves the production of frp panels on machinery which in effect produces one continuous sheet so long as raw materials are fed into the machine.⁹ The continuous line machine, which typically varies in length between 250 to 385 feet, uses cellophane as a moving carrier [15] belt. Polyester resin and fiberglass rovings⁹ (chopped fiberglass fibers) are dropped onto the moving cellophane belt. Pigments and fillers are added as required by a particular order. A second layer of cellophane is pressed upon the mixture of resin and fiberglass, and the carrier moves through a series of ovens which accelerate the chemical curing process. Finally, the carrier reaches forming "shoes" or dies which create the desired configuration such as the widely used sine-shaped corrugation.¹⁰ After passing over the forming shoes, the layers of cellophane are removed and the hardened panels are trimmed and then sheared or sawed to standard lengths or to a custom length specified by the user. Continuous line machines are used solely for the production of frp panels. (CX 3H; Tr. 231, 310-14, 377-78, 479, 484, 490, 535-39, 628-32, 835-36, 849, 924-29, 1158, 1179.)

21. Except for the limited number of instances noted earlier (see Findings 19, 20), all of the producers of frp panels essentially use the continuous line process. (CX's 306A, B; RX 83, pp. 9-10; Tr. 311, 313-14, 928, 1180.)

End Uses

22. Most frp panels are sold for use in the residential, industrial, and greenhouse applications. [16]

TABLE 1: 1974 SHIPMENTS OF FRP PANELS BY USE

	<i>% of Total Square Feet Shipped</i>
Residential	46.5%
Industrial	36.1%
Greenhouses	10.8%
Farm	4.0%
Others	2.9%

(Source: CX 316)¹¹

⁹ A modern continuous line machine can produce frp panels at linear speeds as high as 75 feet per minute for light panels but speeds of 20 to 50 feet per minute are more common. Heavier industrial panels (usually weighing eight to 12 ounces) are produced at lower line speeds of 12 to 18 feet per minute. (RX 83, p. 6; Tr. 313, 409, 539, 629, 662, 836-37, 925-26, 990, 1158-59.)

¹⁰ One producer has an inefficient continuous line machine which requires the use of more expensive fiberglass

23. No other building material identified in the record has the same range of applications as frp panels. (Tr. 329; see RX 14.)

The Residential or Patio Application

24. Conspicuous on the suburban landscape of the United States is that part of the single-family home known as the "patio."¹² This backyard area may or may not have an awning-like covering. If the homeowner opts for such a cover, there is a good likelihood that a choice will be made between a covering made of either aluminum panels or frp panels. (Tr. 1909-10, 1585-86.)

25. The so-called residential or patio application, which includes such other residential uses as fences around swimming pools, carports and carport covers, windbreakers, room dividers, decorator screens, and the [17] "skirts" of mobile homes (when they are not mobile),¹³ accounted for approximately \$20 million in sales at the manufacturing level in 1974. (CX's 69B, 71F, 76A, 93D, 95C, 96A, 216A-232T; Tr. 335, 945, 1581.)¹⁴

26. Patio covers are the most important single "residential" application for frp panels. (Tr. 1619.)

27. The basic frp panel product used in the residential or patio application is the four ounce, 2 1/2 inch sine-wave corrugated panel,¹⁵ which is six to 12 feet long and 26 inches wide. (Tr. 435-36, 557, 956-57.)¹⁶

28. The functional advantage of diffused light transmission — *i.e.*, translucency — is the primary reason for the purchase of frp panels for the patio application. (Tr. 336, 583, 644, 946-47, 1590.)¹⁷
[18]

29. Manufacturers of frp panels stress the translucence of their products in promoting them for the patio application.¹⁸

30. Aluminum panels, in contrast to frp panels, provide the

¹² See Tr. 337.

¹³ See CX 24B.

¹⁴ Manufacturers who reported their sales to the Fiberglass Reinforced Panel Council in 1974 sold 101.5 million square feet of frp panels for residential use. (CX 57-o.) Typically, these panels were sold at 19¢ per square foot by frp manufacturers (Tr. 437, 1966) which would mean residential use frp sales in excess of \$19 million. Ornyte did not report its sales to the Council. If Ornyte's sales are included, the dollar volume of residential sales may be as high as \$24 million. (See RX 89, p. 7, 11.)

¹⁵ See CX 194E.

¹⁶ Some lighter panels and some five ounce panels are sold for residential use. (Tr. 686, 957.)

¹⁷ There are some frp panels used in the patio application which are designed to reduce translucency. (CX 69A; Tr. 663.)

¹⁸ This includes the promotions of Reichhold ("The panels block out the sun's harsh ultra-violet rays. Only soft, glare-free light passes through Alsynite/Structoglas," CX 26B; see also CX's 24A, 76A, B); Glasteel ("Wherever you want to keep the glare out - let the light in - Glasteel Fiberglass Panels," CX 95B; see also CX's 93D, 99A, 100A,

(Continued)

functional advantage of shade in the patio application. (Tr. 552, 583-84, 1541, 1590-91.)

31. In the patio application, frp panels and aluminum panels are sold to homeowners in the following ways:

(a) Custom awning fabricators use aluminum panels overwhelmingly in their installation of patio covers.¹⁹ Only relatively small amounts of frp panel patios are installed by custom fabricators. Thus, Wrisco, identified in the record as the only national distributor of frp panels to the custom awning trade (Tr. 1533-34), [19] had 1974 sales of frp panels of \$663,000 while its sales of aluminum panels were \$2,775,000. (Tr. 1535.)²⁰

(b) Sears, Roebuck sells complete patio kits which include both the support and the cover. The covers for these kits are made of aluminum only. (Tr. 1605.) These kits may be purchased through the Sears catalog and are installed by the homeowner on a do-it-yourself basis, or Sears will arrange for professional installation. (Tr. 1604-05.)

(c) The "do-it-yourself" homeowner, who is in the market for panels *only*, leans heavily towards frp panels. (Tr. 1596-97.) In general the bulk of the sales of frp panels for the patio application are in the form of sales of panels only through mass merchandisers like Sears. (Tr. 1546, 1596-97, 1603-05.) In contrast, aluminum panels are usually sold in the form of complete patio kits or are installed by custom awning fabricators. (See Finding 31(a), (b).) [20]

The record does not contain a satisfactory explanation for either the frp or the aluminum patterns of distribution and consumption except for evidence that custom awning fabricators clearly favor aluminum as an awning material. (Tr. 1543.) The shading and color qualities of aluminum were cited as factors behind this preference, but it is also apparent that there are higher margins to be had on the custom installation of aluminum. (See note 22, *infra* and Tr. 1543, 1554-55.)²¹

32. In setting their prices, producers of frp panels do not take into account the prices for aluminum panels nor are their prices for frp panels sensitive to the demand or to the prices for aluminum panels. (Tr. 336, 413-14, 582-83, 615-16, 636-40, 934-39, 1208, 1231-32.)

33. At the homeowner level, the prices of frp panels and aluminum panels in the patio application tend to be different. As indicated earlier, with the exception of custom installation (see

101, 102, 103); Filon ("Filon translucent panels give you shelter - yet let you keep your sky" CX 217B; see also CX's 216A, B, 217A, 220A, B, 226A, B, 227A, B, 228A-E, 229A-E, 232A-T); and Barclay ("Barclite is able to take full advantage of the free daylight yet remove the harmful, glaring qualities of raw sunlight," CX 229B).

¹⁹ Custom awning fabricators are part of the home improvement industry. They buy component parts including panels from a distributor and construct patios and carports for homeowners on a custom basis. (Tr. 1523-24.)

²⁰ In the custom installation of frp panels the more expensive six and eight ounce panels are used in contrast to the four ounce frp panels bought by the do-it-yourself homeowner. (Tr. 1526.) The use of six ounce frp panels in the custom trade tends to produce sharp differences in the prices paid by custom awning fabricators for frp and aluminum. Six ounce frp panels are sold to custom fabricators at 61¢ per square foot as compared to 43¢ for aluminum. (Tr. 1528, 1532.) Differences and fluctuations in the prices of the two materials, however, have had little effect on sales to custom fabricators: sales of aluminum to the custom trade are consistently going up, while frp panel sales to installers have been on the decline. (Tr. 1549-51.)

²¹ There is no substantial evidence that this pattern is based on ease of installation. While frp panels are easy to work with, and do not require either special skills or special tools for installation — a selling point which frp panel producers have emphasized (CX's 24B, 26B, 69A, 76A, 93C, D, 96B; Tr. 227, 550, 946, 1987) and which might explain why do-it-yourselfers choose frp panels rather than kits or professional installation — the record indicates

Findings 27, 31, note 20 and Tr. 1586, 1610-11), the principal frp product used in the patio application is the four ounce, sine-wave corrugated panel. This panel was sold by Sears for 35¢ per square foot in 1976. (CX 309-Z-76; Tr. 1586, 1610-11.) At the same time, mill-finished four ounce aluminum panels, metallic color, were sold [21] through the Sears catalog for 44¢ per square foot, and white-finished aluminum panels were sold by Sears for 56¢ per square foot. (CX 309-Z-76; Tr. 1587.)²² Heavier (five ounce) frp panels are sold by Sears at approximately the same price as aluminum panels. (CX 309-Z-76; Tr. 1586-88.)

34. The overall pattern in the patio application is that most homeowners choose aluminum either in the form of custom installed aluminum patios or aluminum patio kits. (Tr. 946, 1589-90, 1598-99, 1603-05.) Frp panels are favored by "do-it-yourself" homeowners who economize by neither buying kits nor using custom installers, and prefer the muted light transmitting quality of frp panels over the shading quality of aluminum. (Tr. 336, 583, 946, 1541-42, 1590, 1598.)

THE INDUSTRIAL APPLICATION

Skylights and Sidelights

35. One of the principal industrial applications for frp panels is their use as skylights and sidelights by manufacturers of pre-engineered metal buildings. (Findings 36-44.) [22]

36. The pre-engineered metal building, which is basically made of corrugated steel, is well-accepted as an economical method of constructing manufacturing plants, warehouses, retail stores, small office buildings, schools, gymnasiums, and agricultural buildings. (CX's 288A-H; Tr. 522, 1054-55.)

37. Typically, a pre-engineered metal building manufacturer produces a package containing all the components and accessories of the building including primary framing members, wall and roof coverings. This package or "knockdown building" is distributed through franchised dealers who erect the building for the ultimate user. (Tr. 523, 1052-54.)

38. The pre-engineered metal building industry is substantial. In 1974, the 29 members of the Metal Building Manufacturers

²² As indicated in Finding 31 patio kits are sold by Sears in aluminum only. The prices of these kits (for standard 8 x 16 ft. patio) range from \$114.95 for mill finish aluminum to \$234.95 for white enamel finish aluminum. (CX 309-Z-72). A professionally custom installed patio cover costs approximately \$3.75 per square foot for aluminum and up to \$4.00 per square foot for frp, but in many cases the installed prices are the same for both materials (Tr. 1529, 1539) despite the fact that the cost of frp panels sold to custom installers is higher than the cost of aluminum. See note 20, *supra*.

Association (an association of pre-engineered metal building manufacturers accounting for approximately 75-80 percent of the market) had sales of \$790 million. (CX 286A; Tr. 1064-65.)²³

39. The basic covering materials used in pre-engineered metal buildings are corrugated steel panels. Corrugation imparts strength to the surface. (Tr. 524, 1052-53, 1078.)

40. Frp panels, most commonly corrugated eight ounce per square foot panels, are used in these corrugated metal buildings as the skylights or sidelights [23] which transmit natural light to the working area. (CX 289-Z-8; Tr. 457, 460, 713, 1058-61, 1223.)²⁴

41. Because frp panels can be corrugated to the same specifications as steel, they easily "nest" with the steel corrugated panels and are installed in exactly the same manner as the steel skin of the pre-engineered building. Costly wooden frames or sashes are not required in order to install frp panels in corrugated metal buildings. (CX's 67C, E, 289-Z-8; Tr. 343-44, 455, 460, 524, 646, 713, 1058, 1175.)

42. Frp panels are the only materials used as skylights or sidelights in corrugated metal buildings.²⁵ It is the standard material for this purpose and there is no feasible substitute at this time. (Tr. 713, 953-55, 1060-64, 1080-81.) [24]

43. Manufacturers of frp panels do not consider the prices of glass, acrylic, polycarbonate, PVC or any other material in setting their prices for frp panels to be used for nesting in corrugated metal buildings. (Tr. 320-24, 471-72, 636-40, 715-16, 934-39, 1208.)

44. While frp panels are only a relatively small part of a corrugated metal building (Tr. 1052-53), the volume of sales by frp manufacturers to the pre-engineered metal building industry is substantial. In 1974, five frp panel manufacturers — Thorolyte, Idaho Chemicals, Lasco, Reichhold, and Glasteel — had sales of approximately \$6.8 million to corrugated metal building manufac-

²³ It has been estimated that pre-engineered metal buildings account for about 20 percent of the single-story non-residential construction in the United States. (CX's 288D, 289A-Z-17; Tr. 1077-78.) In addition to the pre-engineered metal buildings, there is a large volume of corrugated metal building construction done by custom builders. (Tr. 523-24, 1069-70.)

²⁴ Typically, such panels were being sold in 1977 for 50¢ per square foot. (Tr. 458.)

²⁵ Because glass cannot be corrugated it must be placed in a sash or a frame — in other words, glass does not naturally "nest" with corrugated steel panels. The substantially higher installed cost of glass as well as its breakability has meant that use of glass in industrial or commercial buildings is confined to showroom or office areas. Similarly, other materials such as acrylic and polycarbonate sheet not only are substantially more expensive than frp panels but in addition they are not available in corrugated form and require the high installation costs of sashes or frames. Polyvinyl chloride (PVC) has been tried in corrugated metal buildings and has been rejected for lack of chemical stability, tendency to warp or yellow, and its low level of structural integrity. (Tr. 357-59, 460-63.)

turers. (Tr. 668, 683-84, 997, 1043, 1189, 1205, 1245, 1259, 1962, 1973.)²⁶ Prior to the Reichhold acquisition, Corrulux, too, sold panels to the same class of users. (CX's 56A-D; Tr. 712.)

"Liners"

45. Frp panels are used to line the interiors of truck trailers, railroad cars, and marine cargo containers. They are also used as liners in food processing plants and farm buildings. (CX's 21, 22, 122F, G; RX's 15, 17; Tr. 834-35, 844, 862-63.)

46. Frp panels used in the liner application are generally flat (but some are ribbed), opaque, and usually weigh above 12 ounces per square foot. (Tr. 833-34, 837.)

47. Frp panels possess several physical characteristics which make them particularly well-suited for use as liners in refrigerated trailers, railroad cars, as well as food processing plants. They are light (an important consideration to cargo carriers), [25] durable (and thus do not crack allowing the entry of bacteria), can be installed without seams (again, retarding the growth of bacteria) and provide an easily cleanable surface which is essential for the maintenance of high standards of sanitation. (CX's 21-22, 159, 174B, 176A, B; RX's 15, 17; Tr. 862-63.)

48. Other materials such as ordinary steel and aluminum are not as well-suited as frp panels for use as liners in refrigerated trailers or railroad cars. Steel has a tendency to rust and aluminum produces a black oxide²⁷ which could damage food products. (Tr. 868-69.)

49. Approximately 99 percent of newly built refrigerated truck trailers and refrigerated railroad cars are lined with frp panels. (Tr. 863-64, 867-68.)

50. Frp panels are also installed in trailers, moving vans, and railroad cars which are used for transporting non-food products. They are preferred for this general transportation application because they provide a surface that does not damage cargoes, resists the corrosive effects of acids,²⁸ and can withstand forklift damage. (Tr. 864-66.)

51. For the interior of food processing plants, the United States Department of Agriculture is encouraging the use of frp panels in place of porcelain enamel or stainless steel since the high-impact

²⁶ See also Tr. 416 for evidence of sales of frp panels to corrugated metal building manufacturers by Filon. Also, in 1973 Resolite had sales of about \$2 million to the pre-engineered metal building industry. (Tr. 456-57; Table III, *infra*.)

²⁷ While stainless steel will not rust, it is not used to line refrigerated truck trailers or railroad cars because its cost is considerably greater than frp panels. (Tr. 869.)

²⁸ An important consideration in transporting such corrosive products as batteries, salt, and leather. (Tr. 864-66.)

resistance and cleanability of the product tends to prevent [26] the collection of dirt and bacteria. (CX 114; RX's 18A, B; Tr. 1029-30.) As a result, many food processors are using frp panels in new construction and in refurbishing existing food plants. (Tr. 870, 1029-30.)

52. The "liner" segment of the industrial application of frp panels has become important. In 1974, the combined total of liner frp panels sold by just three companies — Kemlite, Molded Fiberglass, and Cincinnati Milacron — was approximately \$15.5 million. (RX's 28E, 68; Tr. 909, 1285-86, 2019.) In addition, liner panels were produced by Kalwall, Glasteel, Ornyte, Reichhold, and Lasco. (Tr. 644, 1901-02.)

53. No producer of frp panels for the liner application takes into account the prices of ceramic tile, steel, aluminum or any other material in setting his price for frp panels. (Tr. 636-40, 878-79, 934-39.)

54. It is anticipated that the industrial applications for frp panels, particularly their use as liners, and as skylights and sidelights will be the area of the greatest future growth for this product. (Tr. 995, 1044, 1252-53.)

"Garage Doors"

55. Frp panels are used by manufacturers of garage doors. These garage doors are typically the sectional overhead variety in which the frp panels are installed in an aluminum frame. (Tr. 337.)

56. Other materials including steel, wood, fiberglass, and aluminum are used by manufacturers of garage doors. (Tr. 947, 1005.) There is some indication in the record of functional and price distinctions between these other materials and frp panels in the garage door application (particularly frp's light weight and ability to transmit natural light. (CX's 28, 309-Z-63; Tr. 337-39, 645, 947-49.)) Complaint counsel's evidence, however, with respect to this application is [27] flimsy at best and they failed to prove that any differences which may exist among various materials used in the garage application are so substantial as to indicate a relevant market or submarket.

"Glazing Material"

57. Flat frp panels can be used as replacements for glass in window sashes in conventional buildings.²⁹ (See, e.g., RX's 19A, B.)

²⁹ Use of frp panels as window glazing — i.e., as a replacement for glass or other materials in a sash — should

Generally, frp panel manufacturers testified that use of flat panels as a glazing material — *i.e.*, as a replacement for glass in sashes — constitutes a minor part of their businesses. (Tr. 345, 555-56, 643-44, 955, 1044, 1971; but see Tr. 1924-25, for evidence that Reichhold has been able to sell substantial amounts of frp panels as replacement for entire glass systems including sashes.)

58. Thermoplastics, such as acrylics and polycarbonates, as well as glass itself, are by far the most widely used window replacement materials. (RX 2; Tr. 1622-23, 1635.) Because these other plastics are transparent and frp panels are not, frp panels are not an important glazing material even though they are less expensive than acrylics and polycarbonates. (CX 105; Tr. 1622-28, 1637-38, 1639-40, 1643-45, 1649, 1651-53, 1661-62.) Complaint counsel failed to prove that use of frp panel in the glazing application indicates a relevant market or submarket.

59. There are still other industrial applications for frp panels, such as their use as sign material and as "cladding" for water cooling towers³⁰ in which [28] they compete directly with acrylics, other plastics, asbestos cement, and wood. (RX's 18D, 36-37D; Tr. 419, 1905-08.) Complaint counsel's proof with respect to these applications is anecdotal and thus they failed to prove that use of frp panels in these applications indicates a relevant market or submarket.

The Greenhouse Application

60. The manufacture of commercial greenhouses is a substantial industry. In 1976, the dollar volume of sales of greenhouses to commercial growers was approximately \$50 million. Of this total, 50 percent was derived from the sale of frp glazed greenhouses, 30 percent from the sale of polyethylene film greenhouses, and 20 percent from glass greenhouses. (Tr. 1095.) Sales of commercial greenhouses are usually made on a "turnkey" basis in which a complete, operating structure is built by the greenhouse manufacturer. To offset the cost of labor, a recent development has been the sale of do-it-yourself greenhouse kits which are assembled by the growers. (CX 64-o; Tr. 1703-04.)

61. In addition to commercial greenhouses, institutional greenhouses are constructed for universities and high schools which are mostly made of glass. Hobby greenhouses are made mostly of polyethylene film but glass and frp panels are also used by hobbyists. (Tr. 1096.)

³⁰ See, CX 261B.

62. The basic frp panel sold to greenhouse manufacturers³¹ is 50 inches wide by 22 feet long. Typically, the frp panels for the greenhouse application weigh four [29] ounces;³² are coated with Tedlar;³³ and are made in a corrugated configuration. (Tr. 1098-99.)

63. Based upon total sales of 23.5 million square feet as reported by frp manufacturers to the Fiberglass Reinforced Panel Council, total sales by frp panel manufacturers to the greenhouse trade was approximately \$6.6 million in 1974. (CX 57-o.)³⁴

64. The installed costs of the three basic glazing materials used in commercial greenhouses vary substantially. Frp panels, which are relatively easy to install, are sold on the basis of an installed cost of \$1.65 per square foot as compared to \$1.90 per square foot for glass which requires an expensive glazing operation. The installed cost of polyethylene film is approximately \$1.00 per square foot. (CX 64W; Tr. 340-41, 1101-02.)³⁵ [30]

65. The following are the physical characteristics of frp panels, glass, and polyethylene film which are relevant to the greenhouse application:

(a) Frp panels have a fairly long life-span before darkening (about 25 years if Tedlar coated), high resistance to hail but are inflammable.³⁶ They transmit diffused light,³⁷ but their translucency also means that they cannot be double-glazed for fuel-conservation purposes. (CX's 35, 64i, W, X, 65, 67E, 68B, 184; RX's 11C, 12C, D; Tr. 464-68, 1101, 1704-05, 1710.)

(b) Glass has an indefinite life-span. A glass panel is susceptible to hail damage, but presents no fire hazard. Glass panels give clear undiffused light which is important in geographic areas of low light intensity. (Tr. 466, 1118, 1710, 1748.)

(c) Polyethylene film has a short life-span (one to three years) but it can be removed easily to allow exposure for the purpose of hardening the flowers. Polyethylene film, which is transparent, can be double-glazed thus creating an air space between the layers which serves to [31] conserve energy.³⁸ Seasonal removal, however, of a double-layered polyethylene film greenhouse would not be feasible. (RX's 9, 12i; Tr. 466-67, 1116, 1704, 1788-89.)

66. The physical characteristics of the three principal greenhouse materials, as well as the installed cost differences described earlier,

³¹ Frp panel producers sell to greenhouse manufacturers, greenhouse equipment distributors, and directly to nurseries. (Tr. 1129, 1142, 1905.)

³² Five ounce panels are also used in the greenhouse application. (Tr. 457, 1098.)

³³ "Tedlar" is a du Pont polyvinyl fluoride film that retards discoloration and loss of light transmission. (CX's 64T, U; Tr. 331, 367-68.)

³⁴ In 1974, the Tedlar-coated four ounce panels used widely in the greenhouse trade sold for approximately 28¢ per square foot; that is, 19¢ for the panel, 9¢ for the coating. (Tr. 979, 1966.)

³⁵ The leading greenhouse manufacturer sells four ounce Tedlar-coated frp panels for 40¢ per square foot, glass for 36¢ per square foot, and polyethylene film for 1¢ per square foot. (CX 64-Z-1, Z-4, Z-6.) This manufacturer pays approximately the same price, 22¢ to 25¢ per square foot, for glass and frp panels. (Tr. 1099.)

³⁶ With special treatment, frp panels can be made fire resistant. (CX 64i; RX 11B but see CX's 65G, H.)

³⁷ Diffused light not only reduces burning and spotting of plants (see Finding 67) but also creates a larger growing area. (Tr. 464.)

³⁸ A double layer of polyethylene film allows 92.4 percent of the light transmission of glass. (RX 9.)

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Initial Decision

have created historical preferences for each material depending upon the crop grown and the geographic area where the crop is grown. Thus Roper-IBG, the largest commercial greenhouse manufacturer in the United States,³⁹ which sells greenhouses made of all three covering materials, experienced the following sales pattern in 1976: [32]

TABLE 2: ROPER-IBG 1976 SALES OF FRP, GLASS, AND POLYETHYLENE BY CROP AND AREA AS PERCENT OF TOTAL SALES OF \$8.5 MILLION

	<i>Northwest</i>	<i>Northeast</i>	<i>Southwest</i>	<i>Southeast</i>	<i>Total</i>
Cut Flowers					
FG (frp panels)	3%	0	19%	2%	24%
Glass	2%	0	0%	0	2%
Poly	0	0	0	0	0
Potted Plants					
FG	0	0	23%	3%	26%
Glass	0	2%	0	0	2%
Poly	0	0	0	0	0
Bedding Plants					
FG	0	0	0	0	0
Glass	0	0	0	0	0
Poly	1%	15%	3%	1%	20%
Foliage Plants					
FG	2%	0	4%	8%	14%
Glass	0	0	0	0	0
Poly	0	0	0	2%	2%
Vegetables					
FG	0	0	8%	0	8%
Glass	0	0	0	0	0
Poly	0	2%	0	0	2%

Source: (CX 66)

[33] 67. As shown in Finding 66, cut flower growers, the most important greenhouse growers (CX 65B), prefer frp covered greenhouses.⁴⁰ The geographic centers for the cultivation of cut flowers are in the Salinas Valley area of California, and in the Denver, Colorado area. Since these are areas of high-intensity light which could cause burning and spotting of the flowers if the light were not diffused, the light-diffusing quality of frp panels is preferred. (CX 65D; Tr. 341, 465-66, 950, 1104-06, 1119.) In addition, light diffusion has been

³⁹ Roper-IBG has about 17 percent of the greenhouse market. (Tr. 1095, 1097.)

⁴⁰ The preference appears to be particularly strong among growers of carnations, chrysanthemums, and southern growers of roses, but it is not as strong with northern producers of roses, who require more intense light transmission. (Tr. 466, 1119.)

found to stimulate stem and lower leaf growth, thus producing larger blooms. (Tr. 1104.)

68. Growers of potted plants⁴¹ are more geographically dispersed than the cut flower growers. Potted plants are difficult to ship and growers tend to be located near large urban population centers irrespective of climatic conditions. Climatic conditions, however, tend to dictate the material used in constructing a greenhouse for potted plant cultivation. As a result, in low intensity light areas such as the Northeast or Northcentral glass is favored, but in southern and western areas where there is high intensity light, frp greenhouses are favored. (CX 65D; Tr. 465, 1106-07, 1781.)

69. Bedding plants⁴² are widely grown all across the country but are usually cultivated by smaller growers. The cultivation of bedding plants tends to be a short-term operation confined to the early part of the year. Accordingly, bedding plant growers prefer [34] to use the temporary covering of polyethylene film which can be removed easily for hardening of the plants. (CX's 65D, E, 66; RX 9; Tr. 1107-08, 1126-27.)

70. Foliage plants for indoor decoration are mainly grown in the high intensity light areas of Florida and California. As in the case of cut flowers, frp panels are favored for their light diffusion quality. (Tr. 1108-09, 1760-61.)

71. The experience of Roper-IBG has been that vegetable growers who use greenhouses⁴³ (a very small segment of the greenhouse market) favor frp greenhouses. (CX's 65E, 66.)

72. As the market for various kinds of flowers changes so does the market for the various greenhouse coverings. To illustrate, because of the recent massive importation of cut flowers from Latin America (Columbia) domestic cut flower growers have limited their expansion with the result that there has been a decline in new frp greenhouse construction by cut flower growers. (CX's 65A, B; Tr. 1109, 1746.)⁴⁴ On the other hand, the sharp increase in the popularity of foliage plants has resulted in an equally sharp increase in the demand for frp panels by the growers of these crops. (Tr. 1127, 1760-61.) Similarly, the boom in the bedding plant market and the sharp increase in energy costs in the northern parts of the country, where many bedding plants growers are located, have increased the demand for double-layered polyethylene film. (CX 66; RX's 9, 10; Tr. 1109-10, 1120-21, 1127, 1750-51.) [35]

⁴¹ Lillies, poinsettias, and geraniums, for example. (Tr. 1103.)

⁴² Carnations, petunias, and gloxinia, for example. (Tr. 1103, 1747.)

⁴³ Predominantly tomato growers. (Tr. 1103.)

⁴⁴ There are indications, however, that bad weather, disease, and import quotas may combine to limit severely

73. The consumption patterns described above, reflecting the area in which the grower is located and the crop produced, are not immutable. (Tr. 1747-48.) The traditional installed cost advantage of frp panels has recently been challenged by the importation of the so-called "Dutch Greenhouses" from the Netherlands. On occasion, these glass greenhouse imports have undersold frp panel greenhouses in geographic areas which have traditionally been considered frp panel strongholds. (Tr. 1706-09, 1715.) Even polyethylene film, which in a double-layer application can conserve fuel, may become a feasible alternative to the traditional uses of frp if the cost of energy exceeds the cost of replacing relatively short-lived film.⁴⁵ This threat is less likely to emerge in the warm growing areas in the Southwest and Florida where energy costs are not a major factor. (Tr. 1120-21.)

74. While these threats to the historical frp preference must be recognized, especially in a changing flower industry in which large commercial growers and the use of cost analysis are becoming more evident (Tr. 1711-13, 1714), it would be a distortion of current trade realities to conclude that the emerging challenges are more significant than the established patterns. The preference of many growers for frp is not a fly-by-night phenomenon. It has developed over a nearly twenty year period,⁴⁶ to the point that despite the importation of some glass greenhouses, there has not been a significant number of glass greenhouses [36] installed by cut flower growers within the past six years. (Tr. 1105, 1124-25.) Moreover, the record shows that the three greenhouse materials are still largely price insensitive to each other. For example, a 5 percent increase in the cost of frp panels would not cause greenhouse buyers to shift their purchases from frp panels to glass. (Tr. 1117.) Similarly, a price change in polyethylene film does not affect frp panel sales. (Tr. 413, 660.) And it has been estimated that the price of frp panels would have to go up more than 10 percent to cause frp panel greenhouse purchasers to shift to polyethylene film, and some cut flower growers probably would not change from frp panels to glass even if glass were cheaper. (Tr. 1118-19, 1125.)

75. Most important, the current preference for frp in the greenhouse application is such that frp panel manufacturers simply do not take into account the prices of glass or polyethylene film in setting their prices for frp panels. (Tr. 323, 413-14, 471-72, 561, 589, 636-40, 659-60, 934-39, 1208, 1227-28.)

⁴⁵ Double-layered polyethylene can save 40 percent on heating cost as compared to a single wall system. (RX 9.) Since 1973 the cost of energy used by growers in the Northeast has increased 250 percent. It now comprises 30 percent to 35 percent of a grower's operating cost in the northcentral and eastern portion of the country. (Tr. 1116-17.)

⁴⁶ See CX 65A; Tr. 1700-01.

Supply-Side Perception of Competition

76. Apart from the industrial application for skylights and sidelights and as liners for refrigerated cars where no reasonable alternatives are available, there clearly are alternatives to frp panels in their other key applications as shown in Findings 24-34, 55-75. What the record shows, however, is that the different physical characteristics of frp and aluminum in the patio field, as well as the physical characteristics and costs of frp panels as compared to glass or polyethylene film in the greenhouse application, have established a preference for frp panels among a large number of users who want low cost installation, light transmission, light diffusion and the other qualities of frp panels. (See Findings 24-34, 60-75.) Not only is this preference measurable (total frp sales are not insubstantial) but the frp panel producers function competitively as if the contest to fulfill this preference was indeed a commercially recognizable market. (Findings 77-87.) [37]

Distinct Prices and Price Sensitivity

77. Producers of frp testified overwhelmingly that their competition comes solely from other frp producers. The frp producers said (1) that they do compete against other frp panel producers, and (2) that they do not compete against producers of aluminum, glass, polyethylene film, ceramics, pvc, wood, steel, acrylic, polycarbonate, or any other material. (Tr. 320-24, 336, 469, 471-72, 542-48, 560-62, 632, 636-40, 659-60, 715-16, 878-79, 934-39, 1208, 1223-24, 1260.)

78. In setting their prices for frp panels, the *only* prices which frp producers take into account are the prices of other frp producers. (Tr. 320-24, 469-72, 542-48, 615-16, 636-40, 659-60, 715-16, 878-79, 934-39, 1208.)

79. The frp panel producers neither consider nor monitor the prices of other materials. (Tr. 320-24, 469-72, 542-48, 582-83, 615-16, 636-40, 659-60, 715-16, 878-79, 934-39, 1208, 1227-28, 1232.)

80. The prices charged for frp panels are not sensitive to changes in either the demand or the prices of other materials. (Tr. 320-24, 336, 413-14, 469-72, 542-48, 582-83, 615-16, 636-40, 659-60, 715-16, 878-79, 934-39, 1208, 1227-28.)

Recognition of an Frp Panel Industry

81. For the most part, frp panel producers treat frp panel production as a distinct business: that is, they only manufacture frp panels or produce frp panels in a separate part of multi-product

firms. (CX 122F; RX 89, p. 4; Tr. 307-09, 454-55, 534, 710, 832-33, 923, 1141, 1185, 1234, 1247-48, 1891.)⁴⁷ For example, [38] Reichhold's frp panel business is conducted through its Reinforced Plastics Division which only sells frp panels and the accessories used to install frp panels. (Admissions 1, 2, 3, CX's 305B, M; Tr. 1891.)

82. Frp producers such as Reichhold, Filon and Resolite refer to an frp "industry" in their promotional literature. (CX's 36C, 215, 258D; Tr. 324, 477-78.) See also CX's 304A and 311M, N for recognition of a "Fiberglass Reinforced Panel Industry."

83. The main frp panel producers have joined together to form an association of producers and suppliers who have common marketing and technical concerns. (See Findings 84-87.)

84. The Society of the Plastics Industry (SPI), which has over 1,000 members, is the major plastics trade association in the United States. Within SPI there is a Reinforced Plastics Composites Institute which carries out various technical and promotional activities on all reinforced plastics. The Fiberglass Reinforced Panel Council, a subsection of the Reinforced Plastics Composites Institute was formed over 25 years ago "To bring about the establishment of a stable and integrated growth into the Fiberglass Reinforced Panel Industry" and "to advance the best interest of the . . . Fiberglass Reinforced Panel Industry." (CX 304A.) The membership of the Fiberglass Reinforced Panel Council is composed solely of manufacturers of frp panels who use the continuous line process and their suppliers. With the exception of Kemlite,⁴⁸ all of the significant manufacturers of frp panels are members of the Fiberglass [39] Reinforced Panel Council. The Council, which holds three meetings each year, has its own by-laws, elects its own officers, administers its own business affairs, and appoints its own committees to carry out special projects. (Admissions 42, 43, 44, CX's 305F, N; CX's 304A-C; Tr. 225-28, 230-32, 241, 325, 472-73, 548-49, 650-51, 720, 939-42, 1989.)

85. The Fiberglass Reinforced Panel Council collects frp panel sales data from eight major manufacturer-members and disseminates this information to its membership in quarterly reports. (CX's 57A-o; Tr. 233-34.)

86. The Fiberglass Reinforced Panel Council has taken the initiative in promulgating a voluntary product quality standard for frp panels. The standard, P.S. 53-72 "Glass Fiber Reinforced

⁴⁷ But see Tr. 627 for exception in case of Lasco; Lasco, however, has a separate frp panel sales force.

⁴⁸ Kemlite left the Council in 1965 to concentrate its efforts on transportation industry associations in which it could promote its liner panels. (Tr. 848.)

Polyester Structural Plastic Panels" which covers five, six, and eight ounce panels,⁴⁹ was published by the National Bureau of Public Standards, U.S. Department of Commerce in April 1972. All significant manufacturers of frp panels have accepted this voluntary product standard and many use it in promoting their products. (Admission 49, CX's 305G, N; CX 190; Tr. 232-33, 326-27, 473, 549, 650-51, 941-42.)

87. In addition, the Fiberglass Reinforced Panel Council has engaged in such activities on behalf of frp panels manufacturers as performance testing, the publication of technical information about frp panels, the monitoring of building codes to anticipate their potential effects on frp producers and the convening of meetings to discuss marketplace trends. (Admissions 52, 53, CX's 305G, H, N; CX's 57, 194; Tr. 225-27, 235-40.) [40]

Specialized Vendors

88. Frp panels, like aluminum panels, glass, or polyethylene film, are distributed through mass merchandisers, distributors, and original equipment manufacturers. The customers of frp manufacturers who buy frp for the patio application (mass merchandisers and distributors to lumberyards and custom awning fabricators) also buy aluminum panels for use in the patio application. Similarly, the same greenhouse manufacturers who buy frp panels also buy glass, and polyethylene film for use as greenhouse covering. Distributors of industrial glazing materials simultaneously handle frp panels, acrylics, and polycarbonates. (RX's 4-7, 11A-12J, 53, 73B; Tr. 509-10, 1525, 1582, 1622-23, 1702-03.) The only exceptions to this pattern — that is, *no* specialized vendors of frp panels — are the manufacturers of pre-engineered metal buildings and refrigerated vans who apparently use no material other than frp panels for the skylighting and refrigerated car liner applications. (See Findings 42, 49.)

Conclusion on Market Definition

89. On the basis of buyer preference for frp panels in certain applications, which derives from the physical characteristics and cost of the material, as well as the suppliers' perception of competition, I have concluded that the production of frp panels represents a relevant market or "line of commerce." (Findings 14-88.)

MARKET STRUCTURE AND ENTRY

Concentration

90. In assembling its proposed frp panel universe, complaint counsel argue for exclusion of Butler Manufacturing Company, an important manufacturer of pre-engineered metal industrial buildings. Butler's [41] production of frp panels is for "captive" use only as skylights and sidelights in its own steel buildings. (Tr. 1484-87, 1495.)⁵⁰ Butler's production is not sold in the merchant market and Butler has no intention of entering the merchant market. (RX's 25A, C, *in camera*; Tr. 349, 541-42, 634-35, 718-19, 1066-67, 1484-87, 1497, 1500-02, 1508, 1519.) Inclusion of Butler in an frp panel universe would tend to distort an assessment of potential anticompetitive effects which depend upon market structure and concentration ratios since the record shows overwhelmingly that frp producers do *not* consider Butler to be a competitor, and Butler is so far removed from considering itself in competition with frp panel producers that it knows little about the prices of these producers. (RX 25A, C, *in camera*; Tr. 349, 541-42, 634-35, 718-19, 1508.)

91. With the exclusion of Butler's captive production, the frp panel universe appears as follows: [42]

⁵⁰ Butler produces and sells a small amount of replacement panels for its pre-engineered metal buildings. (RX 26B.) Since the panels produced by other manufacturers are not compatible with Butler's components, purchases of non-Butler replacements by owners of Butler buildings are rare. (CX 25C, *in camera*; Tr. 1503-04.)

Initial Decision

91 F.T.C.

TABLE 3: MARKET SHARES OF FRP PRODUCERS, 1972-1973; 1973 RESTATED
TO SHOW EFFECTS OF ACQUISITION

Name of Manufacturer	1972			1973			1973 Restated		
	Rank	Percentage Share of Total		Rank	Percentage Share of Total		Rank	Percentage Share of Total	
		Dollar Sales	Dollar Sales		Dollar Sales	Dollar Sales		Dollar Sales	Dollar Sales
Reichhold Chemicals, Inc.	3	8,629,690	16.61	2	11,916,853	18.85	1	14,777,038	23.30
Vistron Corp. (Filon Division)	1	11,649,795	22.42	1	12,710,000	20.11	2	12,710,000	20.11
Lasco Industries, Inc.	2	8,700,170	16.74	3	11,110,029	17.57	3	11,110,029	17.57
Kemlite Corporation	4	6,402,719	12.32	4	7,775,333	12.30	4	7,775,333	12.30
Bardon, Inc. (Omnyte Division)	5	3,493,540	6.72	5	4,451,736	7.04	5	4,451,736	7.04
Glasteel, Inc.	10	1,321,309	2.54	6	2,905,892	4.60	6	2,905,892	4.60
Bartley Industries, Inc.	8	2,283,149	4.39	8	2,744,545	4.34	7	2,744,545	4.34
H. H. Robertson Co. (Resolite Division)	7	2,726,345	5.25	9	2,272,834	3.60	8	2,272,834	3.60
Molded Fiberglass Co.	9	1,970,709	3.79	10	2,209,306	3.49	9	2,209,306	3.49
Cincinnati Milacron	11	1,018,000	1.96	11	1,058,000	1.67	10	1,058,000	1.67
Fiber Glass Plastics, Inc.	12	377,920	0.73	12	441,534	0.70	11	441,534	0.70
Thorolyte Fiberglass, Inc.	13	371,506	0.71	13	420,992	0.67	12	420,992	0.67
Harco Chemical Industries, Inc.	14	268,570	0.52	14	309,572	0.49	13	309,572	0.49
Kalwall Corp.	-	0-	0-	15	80,000	0.13	14	80,000	0.13
Corrulux Corp.	6	2,745,579	5.28	7	2,810,185	4.45	-	-	-
Total of All Manufacturers		51,959,001	100.00		63,216,811	100.00		63,216,811	100.00
Total of Top Four Manufacturers		35,382,374	68.10		43,512,215	68.83		46,322,400	73.28
Total of Top Eight Manufacturers		46,630,987	89.75		56,424,573	89.26		58,697,407	92.85

Source: CX 302 except as follows: Kemlite (CX 307B, in career); Molded Fiberglass (RX 27; Tr. 1318); Cincinnati Milacron (RX 68); and Kalwall (RX 83, P. 28).

[43] 92. Table 3 includes a Kemlite liner panel consisting of a sheet of plywood to which a layer of frp is bonded. (See RX's 30-32B.) Table 3 does *not* include the "sandwich" panels produced by Lunn Laminates which consists of two frp skins enclosing a plywood or urethane core. Lunn's products are *not* intended as liners — they are used as the entire sidewall of a truck trailer. (RX's 21A-H; Tr. 1382, 1393-94.) Lunn does not consider itself to be in competition with any firm in the frp panel business and no frp panel producer testified that it competes directly with Lunn, and most never heard of it. (Tr. 318, 475, 541, 634, 719, 1207, 1261, 1382-83.) The Lunn product sells between \$1.50 to \$2.00 per square foot as compared to about 50¢ to 65¢ for frp liner panels.⁵¹ (RX 83, p. 61; Tr. 853, 905, 1405-06, 2019.)

Since Table 3 is confined to pre-acquisition sales it necessarily excludes the "sandwich" panels which were first sold by Kalwall in commercially significant quantities during the period 1975-1977 and which now constitute the largest part of Kalwall's business. Even if Table 3 had included these post-acquisition years, production of this product is not properly part of the frp panel universe. The Kalwall "sandwich" product consists of two frp facings and a grid core constructed of structural aluminum I-Beams. (CX 158B; RX 83, pp. 5-6, 51-52.) This product is not a liner: it is intended to be used to build the entire wall or roof of a building. (CX's 158B, C; RX 83, pp. 6, 45-47.) Kalwall's sandwich panels are produced on a [44] custom basis and most often are sold with installation included. (RX 83, pp. 14, 33, 48.) The Kalwall "sandwich" panels alone (that is, excluding cost of installation) cost between \$4.50 to \$12.00 per square foot. (RX 83, p. 49.) Table 3 *does* include Kalwall's 1973 sales of non-sandwich frp panels for the merchant market (RX 83, p. 28), but does not include such sales for the post-acquisition years 1974-1976. The officers of Kalwall made it plain that their principal product — a high technology "sandwich" panel — is not part of the frp industry, (CX's 157A, B; RX 83, pp. 55-56), and a producer of frp panels for the liner application does not consider the Kalwall "sandwich" a competitive product. (Tr. 912-14.)

Table 3 also excludes the production of M.C. Gill, a producer of high-engineered, custom-designed, and FAA-approved laminates for the aircraft industry which sell at prices as high as \$8.00 per square foot. (Tr. 1434-37, 1449-50, 1452, 1456-60, 1465-67.) The head of marketing for M.C. Gill does not consider himself part of the frp industry and he does not compete with frp panel producers. Frp

⁵¹ Frp coated plywood panels which are used in the liner application, and which are included in Kemlite's sales as reported in Table 3, sell at a price of about 75¢ per square foot. (Tr. 854.) Kemlite also produces ribbed panels for the liner application which are priced at 77¢ per square foot. These ribbed panels are included in Table 3. (Tr. 853.)

panel producers, including one producer who was located six miles away from the M.C. Gill plant, never heard of the firm. (Tr. 475, 540-41, 634, 719, 1002-03, 1434, 1458-60, 1464-65, 1469-70.)

Entry

93. There are no significant capital barriers to entry into the frp market.⁵² [45]

94. There is no evidence that advertising is a significant entry barrier in this industry, although point of purchase advertising is a factor in selecting a supplier of frp panels. (Tr. 1920.)

95. There are no patent barriers to entry into the frp panel industry. (CX 3F; Tr. 378-79, 491-92, 611-12, 1197-98, 2031-32.)

96. Complaint counsel failed to prove that technical expertise was a significant entry barrier in the frp panel industry. While the chemical know-how required in frp panel production is considered complicated (Tr. 648-49, 1728) the weight of the evidence is that the technical expertise necessary for handling resins is readily available from resin producers. (Tr. 492-93, 612-13, 1198-1200, 2035.) Complaint counsel also make much of the fact that a continuous line consists of various pieces of machinery produced by different manufacturers and that no company produces or sells the entire continuous line as a package. (Admissions 31, 32, CX's 305E, N; Tr. 312, 486, 537-38, 572, 629, 928-29.) Although the continuous line must be designed and assembled by the frp panel producer himself, it is a relatively uncomplicated engineering process and it is common practice in the industry to hire a qualified engineer from another manufacturer, or to retain a consultant who can offer a "turnkey" construction contract. (CX's 3F, G, 311; RX's 14A-D, 43; Tr. 230-31, 355, 378, 612, 960-61, 1019, 1238, 1726.)

97. A new entrant into the frp panel industry, however, may be deterred by the prospect of competing against Reichhold and the Filon Division of Vistron, a subsidiary of Standard Oil of Ohio. These large corporations, which already control close to 45 percent of the market (see Finding 91), also have a competitive advantage because of their captive source of polyester [46] resin.⁵³ (Tr. 351-56, 564-65, 648, 860-61, 966-67, 971-72, 1168-69, 1213-14, 1257-58.)

⁵² Current replacement costs for a continuous process machine range between \$30,000 to \$700,000 depending on the degree of automation and the quality of the control systems desired. (CX's 3H, 136H, 312A; RX 25E, *in camera*; Tr. 517, 520, 613-14, 885, 959-60, 963, 1185, 1239.)

⁵³ Reichhold, for example, transfers resin to its Reinforced Panel Division at cost plus freight, which is below the market price. Reichhold is willing to forego its profit on the sale of resin and realize the profit, instead, on the sale of finished panels. Other raw material used by Reichhold in frp panel manufacture are transferred internally on the same basis. (Tr. 2032-33, 2064-66.)

In addition to the price advantage, integration can mean an assured source of supply. During the period 1979-74, frp panel manufacturers experienced a severe shortage of resin.

98. Beginning in the late 1950's and early 1960's, there were a large number of firms which left the frp industry. These exits were attributable to the conversion by many firms to the continuous method process, which meant that small producers then using the hand lay-up method and without adequate resources to make the conversion, were no longer competitively viable. (Tr. 490-91, 494, 900-03, 967-68, 1025-26.) [47]

99. In the last ten years, there has been only one new entrant into the frp market, the Kalwall Corporation. (RX 25D, *in camera*; Tr. 967.)

100. In addition to the acquisition of Corrulux, Reichhold has acquired two other producers of frp panels — Alsynite (Reichhold's San Diego plant) in 1960 and Structoglas (Reichhold's Grand Junction plant) in 1965.⁵⁴ (Admissions 12, 14, 15, CX's 305C, M; CX's 13C, D.)

101. There is a trend in the frp panel market toward the acquisition of independent frp panel manufacturers by large firms: Alsynite, Structoglas, and Corrulux were acquired by Reichhold; Resolite was acquired by H. H. Robertson; Filon was acquired by Standard Oil of Ohio; and Lasco was acquired by Phillips Industries. (CX's 13C, D; Tr. 306-07, 454, 626, 860.)

EFFECTS OF THE ACQUISITION

102. The effect of Reichhold's acquisition of Corrulux may be substantially to lessen competition or tend to create a monopoly in the manufacture and sale of frp panels. (Findings 103-109.) [48]

103. In 1973, the pre-acquisition year, Reichhold ranked second in the frp panel market with 18.85 percent of sales and Corrulux ranked seventh with 4.45 percent of sales. The acquisition of Corrulux raised Reichhold's standing to first, and its market share to 23.3 percent. (See Finding 91.)

104. The acquisition directly increased the level of four firm concentration from 68.83 percent to 73.28 percent, and eight firm concentration from 89.26 percent to 92.85 percent. (See Finding 91.)

105. Corrulux was recognized by other frp panel producers,

of this shortage, the industry's polyester resin needs could not be met. (Tr. 580, 2033.) Reichhold, however, usually has the capability of producing internally its requirements of polyester resin. (Admissions 4, 5, CX's 305B, M; see also Tr. 353.) Filon did not have an adequate internal supply of resin in 1973-74 (Tr. 428-29), but the company increased its polyester resin capability with the competition of a Covington, Kentucky plant in late 1973. (Tr. 405-06.) Resolite, too, receives at least part of its resin requirements from an integrated source of supply. (Tr. 478.) Uncertainty about resin supply was the reason Simpson sold Corrulux to Reichhold. (Tr. 820.)

⁵⁴ Structoglas, which had sales of about \$3 million, was recognized as a significant competitor and may have ranked within the top five companies in the industry. (Tr. 351, 487, 563, 862, 970-71.) Alsynite, too, ranked near the top five. (Tr. 487, 562-63, 861-62, 969-70.) Structoglas was a division of a manufacturer of melamine dinnerware and toys ("Brookpark") which was in dire financial straits. Structoglas was acquired as payment for a debt owed Reichhold by Brookpark on a purchase of melamine. (CX 13C; Tr. 1890.)

including Reichhold, as a competitor during the Simpson years. (Tr. 575, 632, 665, 932, 972.) Prior to the acquisition Reichhold and Simpson solicited and sold to the same customers. (CX's 303, 310, 312; Tr. 972, 1070-72; see also Finding 44.) Simpson considered Reichhold one of his principal competitors. (Tr. 715-16.)

106. As a result of Reichhold's acquisition of Corrulux, actual competition between the second and seventh ranked sellers of frp panels has been eliminated. (See Findings 103, 105.)

107. As a result of the acquisition, competition between Corrulux and other frp panel producers has been eliminated. (See Finding 105.)

108. Respondent has acquired three significant firms in the frp panel market. (See Finding 100.) If this latest acquisition were to be approved, it may tend to trigger an increase in merger activity in the frp panel market since Reichhold's principal competitors may seek approval for acquiring similar market shares.

109. As a result of the acquisition, barriers to entry into the frp panel market have increased. A potential entrant, examining the post-acquisition [49] market shares of 43 percent for the two largest firms, may be deterred from entering because of uncertainty as to its ability to obtain a large enough market share in a relatively small total market. (See Finding 97.)

MARKET CONDITIONS

110. Given the structure of the frp panel industry and the increase in concentration which resulted when Corrulux was acquired, this horizontal acquisition is at least presumptively illegal. According to respondent, however, there are market conditions in the frp panel industry which assure that price competition will remain vigorous, whatever the level of concentration. In Part III, below, I have said that this argument misconceives the purpose of Section 7 which is intended to eliminate the growth or perpetuation of anticompetitive market structures that *may* substantially lessen competition irrespective of the existence of some other pro-competitive aspects of an industry. Moreover, as Findings 111-115 below show, the market conditions cited by respondent are not so inevitably pro-competitive as to excuse a permanent structural change which results when an actual competitor is eliminated.

111. Competition in the frp panel industry is in terms of price, quality, and service. (Tr. 977-78, 985-86, 1188, 1245.) Some important users do not believe that the products of all producers are interchangeable and a reputation for quality can be a crucial

for example, price is not always a primary consideration, and if a supplier has a proven record for quality, only at a 10 percent differential would a leading greenhouse manufacturer even begin to start looking at an alternative supplier. (Tr. 1730-31, see also CX's 65F, G.) While price is very important in the sale of staple products such as four ounce corrugated patio and greenhouse panels, it would take a not insubstantial price difference — a 1/2¢ to 2¢ differential on products which sell below 20¢ per square foot — [50] to induce a switch from a supplier of proven quality and service to another unproven manufacturer. (Tr. 977, 980, 1146-48, 1188, 1192-93, 1544, 1921.) Moreover, despite the claimed vigor of price competition, some producers seem to be able to charge prices which are considerably above the level of their competitors. To illustrate, for the four ounce panel, Idaho Chemical and Thorolyte charged 19¢ recently (Tr. 1224-25, 1243) as compared to about 15¢ charged by Filon, Barclay, and Glasteel. (Tr. 437, 578, 957.) As for the heavier eight ounce panels, Resolite sets its prices at 50¢ (Tr. 458) while Glasteel's price is 40¢. (Tr. 1040.)

112. From the early 1960's to 1973 there was a gradual decline in average frp panel prices, although the decline was by no means constant and there were periods when prices rose. (CX 314; RX's 38H, 39.) This overall decline is mainly attributable to a sharp reduction in the cost of resin and the production of lighter panels as well as the introduction of the continuous line process and its attendant savings in raw material and labor costs. (Tr. 392, 572-73, 897-98, 903-04, 1180-82, 1243-44.) Prices went up precipitously in 1974 reflecting the rise in the cost of oil-based resins; there was a decline in prices from the 1974 high's during the recession and post-recession period of 1975-1976; and at the time of the hearings herein selective prices were increasing again. (CX 314; RX 39; Tr. 392-94, 428-29, 579-80, 609-10, 1145, 1215-16, 1243-44.)

113. The conversion to the continuous line process in the 1950's and 1960's resulted in a substantial increase in frp panel manufacturing capacity. This in turn has meant that during most of the period from the 1960's to the present the industry has had over-capacity. (RX's 38H, 89, pp. 6, 13-14; Tr. 500, 504-05, 595, 1182, 1732.) Unused capacity, however, is to some extent a [51] function of the seasonal nature of the business since production is usually concentrated within the period April to September. (Tr. 594-95, 1036, 1068, 1183-84, 1259, 1551, 2018.) It should also be noted that there have been periods when the entire industry has operated at close to full capacity. Thus in the period late-1973 to mid-1974, almost all plants were operating either at or near full capacity or at the highest level