

IN THE MATTER OF
OWENS-ILLINOIS, INC., ET AL.

FINAL ORDER, OPINION, ETC., IN REGARD TO ALLEGED
VIOLATION OF SEC. 7 OF THE CLAYTON ACT AND
SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT

Docket 9212. Complaint, Jan. 11, 1989--Final Order, Feb. 26, 1992

This final order dismisses the complaint against the respondents because the record does not show that the acquisition of Brockway is likely to substantially lessen competition or to create a monopoly in the glass container industry.

Appearances

For the Commission: *Dennis F. Johnson and Ernest Nagata.*

For the respondents: *Richard C. Weisberg, Latham & Watkins,*
Washington, D.C. *Paul C. Warnke, John C. Calender, and Harold*
D. Murry, Jr., Howrey & Simon, Washington, D.C.

COMPLAINT

The Federal Trade Commission, having reason to believe that respondents Owens-Illinois, Inc. ("Owens") and its wholly-owned subsidiary, BI Acquisition Corporation ("BIAC"), corporations subject to the jurisdiction of the Commission, have entered into agreements with Brockway, Inc. ("Brockway") that violate Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45, that pursuant to these agreements, Owens and BIAC have commenced a cash tender offer to acquire all outstanding common shares of Brockway and intend to merge with Brockway following the cash tender offer, which cash tender offer, acquisition and merger would, if consummated, violate 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 its complaint pursuant to Section 11 of the Clayton Act, 15 U.S.C. 21, and Section 5(b) of

the Federal Trade Commission Act, 15 U.S.C. 45(b), stating its charges as follows:

I. THE PARTIES

A. *Owens-Illinois, Inc.*

1. Respondent Owens is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business located at One SeaGate, Toledo, Ohio.

2. Owens is a manufacturer of packaging products, including glass containers, plastic products, specialty packaging products, tumblers and stemware, scientific and laboratory glassware, glass television components, and prescription containers. It is one of the two leading producers of glass containers in the United States. Owens also has investments in health care (nursing homes) and financial services (mortgage banking). For the year ended December 31, 1986, Owens had net sales of approximately \$2.9 billion and total assets of approximately \$3.5 billion.

3. Owens is owned by Kohlberg, Kravis, Roberts & Co. ("KKR"), a private investment firm. KKR also owns or controls various other corporations, including Beatrice Foods Company, the parent corporation of Tropicana Products, Inc. ("Tropicana"). Tropicana also produces and sells glass containers.

B. *BI Acquisition Corporation*

4. Respondent BIAC is a newly formed corporation organized under the laws of the state of New York, with its principal place of business located at One SeaGate, Toledo, Ohio.

5. BIAC was formed by Owens in connection with the cash tender offer for Brockway's outstanding voting securities. BIAC is a wholly-owned subsidiary of Owens, and is the entity through which Owens intends to acquire Brockway's outstanding voting securities.

C. Brockway, Inc.

6. Respondent Brockway is a corporation organized and existing under the laws of the State of New York, with its principal place of business located at 225 Water Street, Jacksonville, Florida.

7. Respondent Brockway is a manufacturer of glass, plastic and metal containers, caps, lids and closures for packaging consumer and industrial products. Brockway is the third largest producer of glass containers in the United States. The company also operates a regional passenger airline in the northeast corridor. For the year ended December 31, 1986, Brockway had net sales of approximately \$1.1 billion and total assets of approximately \$494.3 million.

II. JURISDICTION

8. At all times relevant herein, respondent Owens has been, and is now, engaged in commerce as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. 44.

9. At all times relevant herein, respondent BIAC has been, and is now, engaged in commerce as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. 44.

10. At all times relevant herein, respondent Brockway has been, and is now, engaged in commerce as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. 44.

III. THE PROPOSED ACQUISITION

11. Owens, BIAC and Brockway entered into an Agreement and Plan of Merger ("Merger Agreement"), dated September 17, 1987,

pursuant to which Owens, through BIAC, commenced a cash tender offer for all outstanding voting securities of Brockway for \$60 per share. In addition, pursuant to a second agreement dated September 17, 1987 ("Option Agreement") among Owens, BIAC and Brockway, Owens has the right to purchase up to 2,300,000 shares of authorized but unissued shares of Brockway for \$60 per share. Following the cash tender offer, BIAC and Brockway are to merge, and Brockway will thereby become an indirect wholly-owned subsidiary of Owens. The total value of the cash tender offer is approximately \$750 million.

IV. TRADE AND COMMERCE

12. A relevant line of commerce within which to analyze the effects of this acquisition is the manufacture and sale of glass containers.

13. A relevant section of the country within which to analyze the effects of this acquisition is the entire continental United States.

V. MARKET STRUCTURE

14. The proposed acquisition would substantially increase concentration in the United States glass container market and would make that market highly concentrated, whether measured by capacity or by unit or dollar sales.

VI. ENTRY CONDITIONS

15. Barriers to entry into the United States glass container market are substantial. Even if new entry were to occur, it would take a long time, during which time substantial harm to competition could occur.

VII. ACTUAL COMPETITION

16. Owens and Brockway are actual, direct and substantial competitors in the manufacture of glass containers in the United States.

VIII. EFFECTS OF THE ACQUISITION

17. The effects of the proposed acquisition of Brockway by Owens and BIAC may be substantially to lessen competition in the relevant market 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, in the following ways, among others:

- (a) It will eliminate substantial direct competition between Owens and Brockway in the relevant market;
- (b) It will substantially increase concentration in the relevant market, thereby increasing the likelihood of successful anti-competitive interdependent conduct, nonrivalrous behavior, and actual or tacit collusion among firms in the relevant market; and
- (c) It will eliminate Brockway as a substantial independent competitive force in the relevant market.

All of the above increase the likelihood that firms in the relevant market will increase prices and decrease the likelihood that they will decrease prices, both in the near future and in the long term.

IX. VIOLATIONS CHARGED

18. The proposed acquisition of Brockway by BIAC and Owens would, if consummated, violate 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.

19. The Merger Agreement and Option Agreement described in paragraph 11 above violate Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. 45.

Chairman Oliver voting in the negative.

INITIAL DECISION BY

JAMES P. TIMONY, ADMINISTRATIVE LAW JUDGE
SEPTEMBER 11, 1989

I. INTRODUCTION

The Commission's complaint, issued on January 11, 1988, charges that the acquisition of Brockway, Inc. ("Brockway") by Owens-Illinois, Inc. ("O-I" or "Owens") and Owens' wholly-owned subsidiary, BI Acquisition Corporation ("BIAC"), is unlawful under Section 7 of the Clayton Act, 15 U.S.C. 18, and Section 5 of the Federal Trade Commission Act, 15 U.S.C. 45.¹ The complaint alleges that the relevant line of commerce is the manufacture and sale of glass containers; that the relevant section of the country is the continental United States; that prior to the acquisition Owens and Brockway were competitors in the manufacture of glass containers in the United States; that the acquisition would substantially increase concentration in the United States glass container market; and that barriers to entry are substantial. The complaint further charges that the effects of the acquisition may be to eliminate an independent Brockway and direct competition between Owens and Brockway; and increase the likelihood of a price increase and anticompetitive conduct among firms in the relevant market.

¹ References to the record are made using the following abbreviations:

F	Findings of Fact
CX	Commission Exhibit
RX	Respondents' Exhibit
Stip.	Stipulation
Tr.	Transcript

Citations to the transcript of testimony are by witness name and the transcript page. Citation to exhibits are by exhibit number and page.

*A. The Parties and Commerce**Owens - Illinois, Inc.*

1. Owens is a Delaware corporation with its principal place of business at One Seagate, Toledo, Ohio.

2. Owens is a manufacturer of glass containers, plastic containers, tumblers and stemware, laboratory glassware, and glass television components. Owens is one of the two leading producers of glass containers in the United States. For 1987, Owens had a net sales of \$3.1 billion and assets of \$4.5 billion. (CX 109U, V.)

3. On March 24, 1987, Kohlberg, Kravis, Roberts & Co. ("KKR") bought control of Owens. (CX 109D.) A February 1987 memorandum concerning the acquisition financing for the buy-out explains that Owens was a "good leveraged buy-out" in part because of the company's "Dominant Market Position" in glass containers, with "approximately 26% share" of the domestic glass container market. (CX 101 Q.) The memorandum describes Owens as follows:

Domestically, GCD [Owens' Glass Container Division] enjoys a dominant market share in both beer and soft drink glass container industries. Excluding Gallo, which manufactures its own containers, the Glass Container Division is also dominant in the wine and wine cooler glass container business. The Division holds the number two position behind Diamond-Bathurst in liquor containers and the number two position behind Brockway in food containers. In the markets for drug and chemical glass containers, which are declining markets, GCD's market position is less dominant. Overall, GCD has approximately a 26% market share in the U.S. (CX 101Z12.)

4. Over 90% of the outstanding common stock of Owens is beneficially owned by KKR Associates, a New York limited partnership, which is an affiliate of KKR. (CX 16C.) Owens is controlled by KKR Associates. (CX 16N.) KKR also owns or controls other corporations, including Safeway Stores, Inc. (Haworth, Tr. 3915-16) and Beatrice Foods Company. (Stollsteimer, Tr. 4331.)

5. Owens is engaged in commerce and is a corporation. (Complaint ¶¶8; Owens Answer ¶¶9.)

BI Acquisition Corporation

6. BIAC is a New York corporation organized with its principal place of business at One Seagate, Toledo, Ohio. BIAC is a wholly-owned subsidiary of Owens that was set up for the purpose of acquiring Brockway's voting securities. (Complaint ¶5; Answer ¶6; CX 16A, M-O.)

7. BIAC is engaged in commerce. BIAC solicited Brockway's shares in commerce in connection with the cash tender offer for Brockway. (CX 16.)

Brockway, Inc.

8. Brockway was a New York corporation with its principle place of business at 225 Water Street, Jacksonville, Florida. Brockway manufactured glass, plastic and metal containers, caps, lids and closures for packaging consumer and industrial products. Brockway was the third largest producer of glass containers in the United States. For 1986, Brockway had net sales of \$1.1 billion and assets of \$494.3 million.

9. Brockway is engaged in commerce.

B. *The Acquisition*

10. Owens, BIAC and Brockway entered an agreement on September 17, 1987, whereby Owens, through BIAC, made a cash tender offer for all outstanding voting securities of Brockway for \$60 per share. (CX 16; CX 17; CX 130.) The value of the cash tender offer was approximately \$750 million for the shares, plus an additional \$110 million for expenses and debt retirement. (CX 16J.) Owens' Chairman, Robert Lanigan, summarized the rationale for the acquisition as follows:

Our determination to maintain and improve our position in glass and plastic packaging is exactly what the Brockway acquisition is about. * * * The objective is to increase our share of the total domestic glass container market by adding to our capacity without adding new capacity to the industry. * * * The best estimates are that Brockway has a 16 percent share of the domestic market. The Owens-Illinois share is about 24 percent. That is only slightly ahead of the share claimed by Anchor Glass, following

its recent merger of Diamond Bathurst. Anchor was at about 14 percent and Diamond at about 10 percent. Of the remaining domestic producers the other significant players are Ball-Incon with some 11 percent, Foster-Forbes with about 6 percent, and Kerr, which has some 4 percent. If we are successful with the Brockway merger, on the glass side we will have about 40 percent of the domestic market. And we will be nearly twice the size . . . and infinitely more productive and efficient . . . than the next largest competitor. One way to look at the Brockway acquisition is that if we are successful the cost will be in the range of some \$240 per ton of capacity added. We are sure that this particular capacity represents the best existing domestic glass container assets, aside from our own. The price is well below what it would cost to add new greenfield capacity, which we would not do in any case. (CX 43J-L.)

11. Owens wanted greater control of the glass container market and higher prices for glass containers. In July 1986, Owens' director of planning reported to Owens' president that the acquisition of Brockway would allow Owens to "Become 40% of glass marketplace" (CX 1221 at 4); "A combination to 40% share could establish price leadership position and effect price assumptions" (CX 118J); and the "Alternative of expanding existing O-I assets . . . may lead to overall price erosion due to over capacity." (CX 118K.)

The report concludes: "Thus, we are in a position to manage the industry to maximize cash for O-I by acquiring these assets." (CX 118K.)

C. Procedural History

12. On November 18, 1987, the Commission voted to seek a preliminary injunction in the United States District Court for the District of Columbia pending the administrative proceeding. A complaint was filed on January 6, 1988, and Judge Joyce Hens Green entered a temporary restraining order, and on February 18, 1988 denied the preliminary injunction. *FTC v. Owens-Illinois, Inc.*, 681 F. Supp. 27, 30 (D.D.C. 1988), *vacated*, 850 F.2d 694 (D.C. Cir. 1988). The district court concluded that end-uses for glass had no acceptable alternatives but that these end-uses are not large enough to result in a "substantial" lessening of competition under Section 7:

The eleven end-use segments presented by the FTC constitute . . . only about 25.8% of the total glass container tonnage. Thus, in the vast majority . . . of end-uses for glass containers, other packaging materials, including plastic, metal, and paper, compete directly and vigorously with glass.

* * * *

The inquiry could end here, since it is possible to conclude for these reasons that, even aggregated, the end-use segments at issue, assuming *arguendo* they are indeed as inelastic as the FTC suggests, do not constitute a sufficient part of the glass market to allow a finding of substantial anticompetitive effect under Section 7. (*Id.*, 681 F. Supp. at 36-37.)

13. The United States Court of Appeals for the District of Columbia Circuit on February 26, 1988, denied the Commission's request for an injunction pending appeal. On April 8, 1988, the court vacated the District Court's Opinion and Order on grounds of mootness. *FTC v. Owens-Illinois, Inc.*, 850 F.2d 694 (D.C. Cir. 1988). The acquisition was completed on April 12, 1988. (CX 109D.)

14. The administrative trial began on November 14, 1988 and concluded on March 30, 1989, with 41 days of hearings. Complaint counsel's case-in-chief began on November 14, 1988 and concluded on December 22, 1988. Respondents' defense began on January 24, 1989 and concluded on March 30, 1989. The record was closed on June 12, 1989, after transcript corrections and decisions on motions for *in camera* treatment from respondents and numerous third parties.

II. THE INDUSTRY

A. Glass Containers

15. Glass containers are used for packaging food, soft drinks, beer, liquor, wine, wine coolers, juices, chemicals, and other products. (CX 131D.) During 1987, domestic sales of glass containers were \$4.9 billion (CX 1451F), with shipments of more than 40 billion (281.6 million gross) containers. (RX 885D.)

16. The following table shows unit distribution of glass containers by end-use during 1987 (RX 885D):

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	Millions of <u>Gross Units</u>	Percent <u>of Total</u>
Food	89.9	31.9
Beer	85.4	30.3
Non-Alcoholic Beverages	62.4	22.2
Wine	16.5	5.9
Distilled Spirits	11.8	4.2
Medicinal & Health	8.6	3.1
Toiletries & Cosmetics	5.6	2.0
Chemicals	<u>1.4</u>	0.5
TOTAL	281.6	

17. Industry shipments of glass containers fell during the early 1980's but have stabilized. (CX 131D; RX 885D.) The drop in the early 1980's resulted from the loss of family-size (two-liter) soft drink containers to plastic, and a shift in the beer industry to metal cans. (CX 50Z10; CX 49R; CX 1013N; CX 1026I.) Analysts predict a stable industry with a growth of about 1% a year. (Zoon, Tr. 58; CX 52C, I; Cavanagh, CX 90V and Tr. 5239; RX 885D, E; CX 935E.)

18. The loss of family-size soft drink containers to plastic in the early 1980's occurred because of the weight and breakability of glass. (Harralson, Tr. 1568; Honickman, Tr. 3859-60; CX 49R; CX 1013N.) The loss of glass sales in the beer market occurred because of a change in the relative prices between glass and aluminum cans, as well as a declining market share for the Miller High-Life brand, which was a large user of glass. (CX 1013N; CX 1026I; CX 50Z10.)

19. Owens regards the shift from glass to plastic for two-liter bottles as an "aberration" (CX 1013N), and does not regard the drop in glass container sales in the early 1980's as reflecting a broad shift away from glass to plastic. (CX 1013N; See CX 49R; CX 50Z10.)

20. Before the Owens/Brockway acquisition, the domestic glass container market had six producers with four or more plants, and twelve smaller firms. (CX 1451B-E.) Of these twelve, only Latchford and Wheaton operate more than one plant, and five are single-plant in-house producers for glass container users (Central New York - Miller [CX 79Z36]; Gallo - Gallo [CX 79Z62]; Columbine - Coors [CX 79Z37]; Industrial - Seagram/Tropicana [CX 79Z65]; Hillsboro - Hiram-Walker [CX 79Z64]). (CX 1451B-E; CX 551T-U.) The following chart shows, for each producer, the number

of plants in operation in 1987, 1987 dollar sales and market share based on 1987 dollar sales volume (CX 1451B-F):

<u>Company</u>	<u>Number of Plants</u>	<u>1987 Sales (\$ Millions)</u>	<u>Share</u>
Owens-Illinois	16	\$1,153	23.6%
Anchor/Diamond-Bathurst	22	1,135	23.2
Brockway	11	687	14.1
Ball-Incon	12	525	10.7
Triangle (Foster-Forbes)	8	387	7.9
Kerr	4	146	3.0
Miller (Central New York)	1	102	2.1
Latchford	2	101	2.1
Wheaton	2	88	1.8
Gallo	1	86	1.8
Coors	1	72	1.5
Industrial (Seagram/Tropicana)	1	70	1.4
Liberty	1	60	1.2
Glenshaw	1	45	.9
Anchor-Hocking (Carr-Lowrey)	1	30	.6
Hillsboro	1	26	.5
Leone	1	15	.3
Arkansas	1	14	.3

21. Since 1980, there has been a trend toward concentration in this market due to mergers and acquisitions (CX 26Z301; CX 32, CX 123K, CX 921B, CX 936A, Z30, CX 1007Z7, CX 1011):

1980	Ball acquired Metro-Pak
1981	Diamond-Bathurst acquired National Bottle
1983	Anchor acquired Midland Glass
1983	Chattanooga Glass (Container General) acquired Glass Container Corp.
1983	Foster-Forbes (later acquired by Triangle Industries) acquired four plants from Kerr
1985	Diamond-Bathurst acquired Chattanooga (Container General)
1985	Diamond-Bathurst acquired Thatcher
1987	Ball and Incon (owner of the former Madera, Laurens, Northwestern and Pierce glass companies) merged glass operations to form Ball-Incon
1987	Anchor acquired Diamond-Bathurst
1988	Owens acquired Brockway

22. Since 1980, 30 plants, 100 glass furnaces, and 350 glass-making machines have been shut down. (CX 27Z73-Z75; CX 79G; CX 816T.)

23. A June 26, 1987, Owens memorandum to members of the board of directors at KKR observes that all of this "consolidation" among container producers "leads to a more stable pricing environment." (CX 109Z38; CX 123D; CX 843E.)

B. Metal Containers

24. Domestic shipments of metal cans during 1987 totaled 109.3 billion units, valued at \$10.9 billion. (RX 885A, B.) Metal cans are used for beverages with 1987 end-use as follows (RX 885A):

Shipments (billions of units)	
Soft Drinks	40.3
Beer	36.5
Food	28.4
General Packaging	4.1

25. The domestic producers of metal cans include Triangle (American-National Can), Continental, Crown Cork & Seal, Reynolds, Ball, and Anheuser-Busch. (Zoon, Tr. 92.) The Department of Commerce forecasts that the metal can industry is expected to grow at an average annual rate of 3%, measured in constant dollars, during the period 1989-93. (RX 885C.)

C. Plastic Containers

26. Shipments of plastic bottles during 1987 totaled approximately 35.5 billion units. (RX 885E.) Distribution by end-use during 1987 was as follows (RX 885E):

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Shipments
(millions of units)

Soft Drinks	7,970
Household Chemicals	5,302
Milk	5,235
Medicinal and Health	4,113
Beverages (except soft drinks)	3,260
Toiletries/Cosmetics	2,889
Automotive and Marine	2,700
Food (other than milk)	2,233
Industrial Chemicals	400
Other	1,425

27. Plastic containers are produced from a variety of resins, including polyethylene terephthalate ("PET"), high density polyethylene ("HDPE"), low density polyethylene ("LDPE"), polyvinyl chloride ("PVC"), polypropylene ("PP"), and polystyrene ("PS"). (Carter, Tr. 2515-18; RX 885E.)

28. PET is a clear resin used for soft drinks, peanut butter, mustard, barbecue sauce, and cough medicine. (Carter, Tr. 2516.) PET does not have a good oxygen barrier, which affects the shelf-life and the taste of some products. (Malone, Tr. 5927; F 109.)

29. PVC can be produced as a clear or pigmented (opaque) resin that is used for edible oils, automotive waxes, engine additives, and charcoal lighter fluid. (Carter, Tr. 2516.)

30. HDPE is a translucent resin that can be used to make translucent or opaque containers. End-uses for HDPE include industrial and household chemicals, milk and other dairy products, large institutional food products, and automotive products. (Carter, Tr. 2517.)

31. LDPE is a resin used to produce translucent or opaque containers. LDPE is used primarily for mustard containers. (Carter, Tr. 2517.)

32. Polypropylene resin is not clear, but has "contact clarity" so that the color of the contents can be discerned through the container, and is used for table syrups and disposal units for medical waste. (Carter, Tr. 2518.) Polypropylene has high oxygen permeability relative to glass, which should not be used for a product that requires long shelf-life. (Erwin, Tr. 5134.)

33. In recent years, plastic container producers have combined resins into opaque or translucent "multi-layer" squeezable containers, such as those used for Welch's squeezable jelly and Hunt's Ketchup. (Rembert, Tr. 169-70; Stollsteimer, Tr. 4285-88, 4352-53.) These containers consist of several layers of different resins. (Trumbull, CX 25 at 26-27.) More costly than glass, these containers have been successful in ketchup, but not for mayonnaise, jelly, or baby juice. (Zoon, Tr. 52-53, 75; F 131, 155, 197.)

34. Domestic producers of plastic containers include Sewell, Johnson Controls, Continental, Amoco, Owens-Illinois, Triangle (American-National Can), and Ball. (Zoon, Tr. 34; Carter, Tr. 2515.) In multi-layer plastic containers, Triangle (American-National Can) has a 50% share, Continental has a 15% share, and Owens a 35% share. (CX 403B.)

35. Consumption of plastic bottle materials during 1987 as follows (RX 885E):

	<u>Millions of Pounds</u>
High density polyethylene (HDPE)	2,587
Polyethylene terephthalate (PET)	881
Polyvinyl Chloride (PVC)	214
Polypropylene (PP)	119
Low density polyethylene (LDPE)	47
Polystyrene and other	53

36. The growth rate for plastic containers slowed in 1988 due to three factors: (1) difficulty in converting the additional glass and metal users to plastic, (2) tight resin supplies and increased prices, and (3) uncertainty about recycling legislation. (RX 885E.)

III. RELEVANT PRODUCT MARKET

A. Glass Containers

37. There are two types of glass containers: wide-mouth and narrow-neck. (CX 99A, B, C.) Wide-mouth jars are used for non-pourable products such as mayonnaise or pickles. Narrow-necked containers are used for beer, soft drinks, and ketchup. (Zoon, Tr. 42; Blecharz, Tr. 4979-80.)

38. Glass has characteristics required for:

- Products that require a clear, retortable container -- such as baby food or spaghetti sauce with meat. (F 105 - 145.)
- Products that require a clear, wide-mouth, hot-fillable container -- such as baby juice, pickles, spaghetti sauce without meat, or jams and jellies. (F 105 - 164.)
- Products that require a clear, wide-mouth, impermeable container -- such as mayonnaise. (F 185 - 197.)
- Products that require a clear, hot-fillable, impermeable container -- such as shelf-stable juice. (F 165 - 184.)
- Products that require a clear, impermeable container that provides a quality image -- such as wine, wine coolers or distilled spirits. (F 198 - 225.)
- Products that require a clear, impermeable container -- such as certain single-serve soft drinks. (F 227 - 229.)

39. Glass containers have characteristics not found in other types of containers: clear, impermeable, retortable, resealable, inert, rigid, quality image, microwaveable and recyclable. (F 40-52, 96-104.)

1. Clear

40. Glass is clear, allowing the consumer to see the contents of the container. (Jones, Tr. 512-14; Rottman, Tr. 919; Willers, Tr. 1695, 1705; CX 553A.)

41. Metal cans and many plastics lack clarity. (Zoon, Tr. 38; Jones, Tr. 581; Jameson, Tr. 795.)

2. Impermeable

42. Glass is impermeable so it does not allow air or moisture to enter the container or gases (such as carbonation) to escape, which protects the contents from spoiling and provides extended shelf-life. (Jones, Tr. 519; Rottman, Tr. 919; CX 553A.)

43. One disadvantage of plastic for use in packaging food and beverages is inadequate shelf-life. (Zoon, Tr. 38; Cavanagh, Tr. 5339; Coakley, CX 23X-Y.)

3. Retortable

44. Retort is sterilization used for meats and vegetables, cooking them in the jar at 235-255 degrees and at high pressure. (Jones, Tr. 514; Rottman, Tr. 911-12; Gigliotti, Tr. 5677.) Baby juice, and jams and jellies are "hot-filled" at temperatures from 190-215 degrees. (Rottman, Tr. 912.) Glass containers are retortable and are used for products that are heated in the container, pasteurized, or hot-filled. (CX 553A; Buttermore, CX 24Z5, Z19.) There are no clear plastic containers that can be retorted. (F 68.) There are no commercially available clear wide-mouth plastic containers that can be hot-filled. (F 69.)

4. Resealable

45. Glass containers can be closed, permitting consumers to save the unused product for future use. (Jones, Tr. 519; Jameson, Tr. 795; CX 553A.)

46. Metal cans cannot be closed. (Jones, Tr. 581; Jardis, Tr. 1321; Coakley, CX 23X.)

5. Inert

47. Glass is inert, and will not affect the taste of the contents. (Faulkner, Tr. 1305; Jardis, Tr. 1321-22; CX 553A.) Plastic containers and metal cans are not inert. (Jones, Tr. 520-21; Jardis Tr. 1321-22; Willers, Tr. 1697; Erwin, Tr. 5142.)

6. Rigid

48. Glass containers are rigid, which permits their use on high-speed filling lines, as well as leak-proof closures, and provides strength so that cases can be stacked in warehouses. (Jones, Tr. 517, 527-29, 545; Rottman, Tr. 912-13, 920; CX 553A.)

49. Plastic containers lack rigidity, causing "paneling," (plastic buckling inward toward a vacuum.) (Mitchell, Tr. 680; Erwin, Tr. 5119.) Plastic's lack of rigidity requires slow filling line speeds relative to glass (Jones, Tr. 529; Rottman, Tr. 913; Faulkner, Tr.

1269) and the inability to use some closures without leakage. (Jones, Tr. 527-28; Wilson, Tr. 2213.) Plastic cannot be stacked as high as glass. (Jones, Tr. 517, 529; Rottman, Tr. 930; Faulkner, Tr. 1269.)

7. Quality image

50. Glass is perceived as projecting a quality image. (Willers, Tr. 1696; Smith, Tr. 1931, 1936; CX 553A, B.)

8. Microwaveable

51. Glass can be used in microwave ovens. (Jones, Tr. 519-20; CX 553A; CX 1022R.)

9. Cost

52. Glass is the lowest cost container for many uses. Plastic mayonnaise containers would be 25-30% more than glass. Plastic for baby juice would be 2-3 times the cost of glass. (Faulkner, Tr. 265-67; Mitchell, Tr. 660, 669.) The cost of plastic containers relative to glass results from the cost of the container itself, and costs for closures, and cartons. (CX 391I; CX 393B; CX 1007F.)

B. *Substitution*

53. Demand for glass containers is influenced by: the size of containers (F 54-57); the portion of retail price represented by the glass container (F 58); the testing involved in packaging decisions (F 59-65); and functional, marketing and cost limitations on packaging. (F 66-80.)

54. Plastic costs more than glass in smaller size containers than it does in larger sizes (F 55); the lightness and safety of plastic in large sizes is not important in smaller sizes (F 56); and permeation problems with plastics are magnified in small sizes. (F 57.)

55. The cost of plastic compared to glass is higher as container sizes become smaller. (Zoon, Tr. 39-40; Jones, Tr. 544; Rottman, Tr. 924-25.)

56. In large containers, such as two-liter soft drinks, the weight and breakability of glass is more disadvantageous than in smaller sizes. (Harralson, Tr. 1568; Bourque, Tr. 2078; Honickman, Tr. 3859-60; Lemieux, CX 26Z168-Z169.)

57. The surface-to-volume ratio is a measurement of the area of the container in contact with the contents relative to the total volume of the container. (Ayres, Tr. 1857-58.) The surface-to-volume ratio increases as the container size gets smaller. (Zabinko, Tr. 5447.) As the surface-to-volume ratio increases, the shelf-life of plastic containers decreases because of permeation. (Bourque, Tr. 2076.)

58. The price of a glass container is about 10-20% of the wholesale price of the packaged product. (Jameson, Tr. 895; Rottman, Tr. 935.) The price of a glass container is less than 10% of the price to the consumer. (CX 21 at 4.)

59. Users of containers do not switch back and forth over the short term between types of packages based on costs. (F 60.) The package is a part of their brand identity (F 32), and changes in packaging are made at the highest corporate levels. (F 62-65.)

60. Food and beverage container customers do not switch back and forth between glass and plastic containers based on relative prices. (Carter, Tr. 2537; Lankester, Tr. 4038; Blecharz, Tr. 4961.) Switching requires changing production and distribution systems, and large costs. (Erwin, Tr. 5147, 5157; F 62.)

61. Packaging is important to brand identity. (Willers, Tr. 1716-17, 1719; Lankester, Tr. 4027, 4029-30; Stollsteimer, Tr. 4333-34.)

62. Switching from glass to plastic is a long-term decision. The customer must make line modifications, equipment changes and a major marketing commitment before switching. (Carter, Tr. 2537-38; Blecharz, Tr. 4911; Erwin, Tr. 5052.)

63. Because packaging is important, decisions about changes are made only at the highest corporate levels. (Smith, Tr. 1923-24, 1926; Erwin, Tr. 5116-18.)

64. Firms conduct extensive testing of shelf-life, consumer preference, filling lines, and distribution before a decision on a container change. (Mitchell, Tr. 675-76; Smith, Tr. 1925-26; Erwin, Tr. 5142-43.)

65. Packaging tests require a long period of time. (Bourque, Tr. 2067-68.) Seagram took five years to evaluate 1.75 liter distilled spirits in plastic before test-marketing. (Smith, Tr. 1925-26.) CPC evaluated plastic for packaging its peanut butter for about three or four years, and for two more years to convert. (Mitchell, Tr. 674.)

66. The shelf-life and processing requirements of the products in the food and beverage industry are diverse. (Zoon, Tr. 39; Trumbull, Tr. 4196; Gigliotti, Tr. 5737.) The extent to which other types of containers compete with glass varies by end- use. (CX 540A.) That plastic might be an acceptable package for peanut butter does not indicate whether it would be acceptable for baby food. (Blecharz, Tr. 4913-14; Erwin, Tr. 5150.)²

67. The attributes that a food packer requires from a container vary with the process for making and filling. (Gigliotti, Tr. 5742.) Some food and beverages are retorted or hot-filled; others are warm-filled or cold-filled. (Rottman, Tr. 911-12; Willers, Tr. 1704; Stollsteimer, Tr. 4339.)

68. No clear plastic containers could be used for retorted products such as baby food or retorted spaghetti sauces. (Carter, Tr. 2531-32, 2587-88; Gigliotti, Tr. 5715, 5728, 5736, 5689-90; Malone, Tr. 5931.)

69. No clear wide-mouth plastic containers could be used for hot-filled products such as baby juice, spaghetti sauce, jams and jellies, or hot-packed pickles. (Zoon, Tr. 55-56; Carter, Tr. 2531-32; Gigliotti, Tr. 5689-91.)

70. Plastic does not provide the barrier for shelf-life in some products. (Erwin, Tr. 5137-38; Zabinko, Tr. 5391, 5423, 5432-33, 5447-48.)

71. Wide-mouth plastic containers with high barrier capabilities and heat resistance are a long way off. (CX 45F.)

72. Plastic containers have problems of clarity for baby food (F 118) and spaghetti sauce with meat (F 140); for wide-mouth products

² That a product may be packaged in a type of container in a foreign country may not tell much about whether that package would be accepted in the United States. (Erwin, Tr. 5145-47.) Kraft packages mayonnaise in squeezable tubes in Italy, but mayonnaise is used in small portions to decorate hors d'oeuvres in that country. (Erwin, Tr. 5146.)

where clarity, heat resistance and barrier properties are needed (such as baby juice (F 109), jams and jellies (F 151), and pickles (F 163)); for hot-pack products where clarity and high barrier is needed, such as shelf-stable juice (F 170); and for mayonnaise, wine, wine coolers, and distilled spirits. (F 193, 201, 212, 219.)

73. Glass containers will not be replaced by plastic in beer, retorted products and quality wine (Carter, Tr. 2587); (pickles, spaghetti sauces, baby food) (Gump, Tr. 4238); (wide-mouth hot-pack and retortable containers, including sauces, jams and jellies, and baby food) (Trumbull, CX 25Z14); (baby food, pickles, jams and jellies, and wine) (Lemieux, CX 26X); ("processed food packages or in any shelf-stable food pack that is highly sensitive to oxygen spoilage"). (Cavanagh, Tr. 5239-40.)

74. Multi-layer plastics are not clear and have pricing, technology and consumer acceptance problems. (F 152-156 (jams and jellies); F 197 (mayonnaise); F 161 (relish); F 109, 125-133 (baby juice)).

75. Brockway's 1987-89 Three-Year Plan predicts that plastic will be limited for food packaging (CX 903Z):

Growing concern on the part of food processors for product compatibility, safety and even recycling issues will dampen the penetration of plastics into our markets. In addition, very few plastics packages are completely cost effective, because of slower line speeds or higher spoilage rates.

76. Ketchup changed to plastic containers. (CX 1022I.) Squeezability of a plastic container is an advantage for ketchup because it is difficult to pour out of a glass container. (Stollsteimer, Tr. 4337, 4352; Blecharz, Tr. 4916-19.)

77. Peanut butter changed to plastic containers because of lighter weight and shatter-resistance, in a product consumed by children.³ (Mitchell, Tr. 673-74; CX 45-O; Lankester, Tr. 4035; Coakley, CX 23Z132.) Peanut butter can be packaged in PET because it is not hot-filled and does not have the shelf-life problems of other food products since it is not sensitive to oxygen or moisture. (Carter, Tr.

³ Kraft converted its ice cream toppings to squeezable plastic because it is a "kid oriented" product and plastic provides break-resistance and ease of handling. (Erwin, Tr. 5001.)

2532, 2539.) Like ketchup, the peanut butter conversion occurred in spite of higher costs for plastic. (CX 244B (30-35% premium for plastic over glass); Mitchell, Tr. 676 (20-25% premium for plastic).)

78. Price is one of several factors in determining the type of container that a food processor uses, and is less important than marketing considerations. (Smith, Tr. 2024; Stollsteimer, Tr. 4336-38; Gigliotti, Tr. 5668-69.)

79. Consumer preference is a factor in determining which package is appropriate. (CX 1032J.)

80. Increases in the cost of glass containers do not cause switching to other types of containers. (Blecharz, Tr. 4900-01 and CX 2104Z11.) Despite increases of 63.7% on 15-ounce Worcestershire sauce, 13.93% on 18-ounce barbecue sauce, and 11.98% on 10-ounce Worcestershire sauce, Heinz stayed in glass. (Blecharz, Tr. 4963.)

81. Glass producers do not bid against other types of containers. (Smith, Tr. 1945-47; Carter, Tr. 2538-39, 2532-33; Blecharz, Tr. 4903-04.) When Seagram asks for bids on containers, it does not ask for glass and plastic bids at the same time for the same items in order to get a lower price. (Smith, Tr. 1946.)

82. In most uses, producers of one type of container do not generally take into account the prices of other types of containers when making their bids. (Carter, Tr. 2538.) Where the containers may be substituted, however, as in the single serve soft drink market, the price of competing materials may be a factor. (F 237; Honickman, Tr. 3832-33; Leone, Tr. 2700.)

83. Metal can and glass prices do not move together. (CX 810.) Plastic prices are more volatile than glass prices, so that glass and plastic prices at times move in different directions. (Erwin Tr. 5159; Whiting, CX 1221 at 102.)

84. Plastic bottles, glass containers, and metal cans have different cost. Glass is produced from sand, soda ash and limestone. (Cavanagh, Tr. 5193.) Metal cans are made from aluminum or steel. (Zoon, Tr. 46-47.) Plastic containers are produced from plastic resins which are derived from petroleum-based ethylene and ethylene glycol. (CX 414A.) Half of the costs of a plastic container is raw materials. (Zabinko, Tr. 5464.) The raw material cost of glass is

about 11-13%. (CX 23G.) About 11% of glass costs relates to the price of oil, while 42% of PET costs relates to oil. (CX 1032H.)

85. The cost of raw materials is an advantage glass has had over aluminum, steel and plastics. (CX 1034Z5.)

86. The prices of plastic resins have gone up about 25-30% since late 1987. (Zoon, Tr. 74; Carter, Tr. 2520-21.)

87. Resin price increases are due to increases in the prices of ethylene and ethylene glycol, the raw materials that are used for producing plastic resins. (Carter, Tr. 2522; Zabinko, Tr. 5454; Trumbull, CX 1226 at 18, 21.) Due to a world-wide shortage of ethylene in early 1988 (CX 411), the market price of ethylene and ethylene glycol increased, resulting in higher resin prices. (Carter, Tr. 2522.)

88. The resin price increases since late 1987 have been passed on to food and beverage producers in higher plastic container prices. (Carter, Tr. 2522-23; Erwin, Tr. 5159; CX 938Z75.)

89. Although PET resin production capacity is expected to increase during 1989, non-container demand for PET also is increasing. Thus, the growth in PET resin capacity may not result in lower prices for PET containers. (Carter, Tr. 2526.)

90. Plastic and metal containers are sold FOB plant of manufacture; glass containers are sold on a delivered basis. (Blecharz, Tr. 4954; Coakley, CX 23Z71; Trumbull, CX 25Z64.)

91. Although plastic containers are lighter in weight than glass containers, there is no freight savings. (Cavanagh, Tr. 5256.) Freight rates are determined on truckload basis, not by weight. (CX 2119B.)

92. The plastic container division at Owens employs a separate sales force, research and development department, and profit center from the glass container division. (Bachey, Tr. 3548-49.) The marketing of plastic containers is separate from glass containers. (Bachey, Tr. 3551-52.)

93. Purchasers maintain separate buyers for different types of containers. Heinz has one buyer for glass, one for metal, and one for plastic. (Blecharz, Tr. 4885-86.)

94. Owens computes its market shares based on a glass market, without including other rigid packaging. (CX 33; CX 34A-C; CX 118D.) Owens estimated the 1985 market shares of the companies in "Glass Containers" by end-use segments as follows (CX 26Z239):

	Initial Decision		115 F.T.C.
	<u>Brockway</u>	<u>O - I</u>	<u>Total</u>
Soft Drink	19.0%	32.8%	51.8%
Beer	15.0%	25.0%	40.0%
Food	18.5%	16.1%	34.6%
Other	<u>6.8%</u>	<u>19.2%</u>	<u>26.0%</u>
	15.6%	23.1%	38.7%

95. There is a trade association for glass containers (CX 1121A-H), and a separate trade association for metal cans (RX 918A).

96. Glass is recyclable into new food and beverage containers and has a recycling value in excess of handling costs. (CX 380C; CX 2448J.) Brockway has a waste glass redemption program recycling glass recovered from its manufacturing process and from public sources. (CX 20G.) Plastic containers have a recycling disadvantage inhibiting their penetration of food and beverage markets. (CX 123D; CX 397A-I; Whiting, CX 1221 at 179-180.) PET has little recycling value and is not being recycled.⁴ (Gigliotti, Tr. 5733-34; CX 380C; CX 91I.)

97. Glass and metal can be recycled into new food and beverage containers. Plastic cannot be re-used to make new food and beverage containers because any contaminants absorbed into the side wall of the plastic cannot be cleaned out. (Carter, Tr. 2528; Honickman, Tr. 3844; Trumbull, CX 25Z42-43.)

98. Most PET containers are used for food or beverage applications. (Trumbull, Tr. 4197; Malone, Tr. 5928.)

99. The recycling problems with plastic increase when more than one type of material is contained in the bottle (such as soft drink bottles with HDPE base cups) because the resins must be separated as part of the recycling process, which is complex and costly. (Trumbull, Tr. 4157.) Multi-layer plastics are not currently recyclable. (CX 416D.)

100. Some states restrict the use of plastic containers. The state of Washington does not allow new distilled spirits brands in plastic, and in the future no PET will be allowed. (CX 337.) California

⁴ Other plastics also have environmental problems. PVC containers may leach vinyl chloride monomer, a known carcinogen, from the container into the contents of the bottle. (Trumbull, Tr. 4107.) Incinerated PVC produces pollutants. (Lanckester, Tr. 4051.)

requires producers and distributors of carbonated beverages to pay a deposit per bottle, which increases if certain recycling rates not achieved. (Langer, Tr. 1454.) Aluminum cans and glass containers are close to achieving the rates, but plastic containers are "nowhere close to being recycled" at the required levels. (Langer, Tr. 1455.) Certain forms of plastic containers have been banned in some areas. Kentucky prohibited the sale of PET 12 oz. package because of recycling concerns, and sales were discontinued nationwide. (CX 71A; CX 101Z51; CX 360C.)

101. In April 1988, "A-1 Steak Sauce conversion to PET was canceled just prior to market test due to recycling issues." (CX 406B.) The Coca-Cola bottler in Oregon switched back to glass from PET in 16 oz. and limited the use of plastic to two-liter containers "due to opposition to plastics by environmentalists and others." (CX 399Q.)

102. Coca-Cola test-marketed Petainer, a 12-ounce PET can with metal ends during 1986/87, but dropped the test after resistance over the container's recyclability. The Petainer was very difficult to recycle because it combines plastic and metal and there was no process to economically recycle the package. (Whiting, CX 1221 at 114-115; CX49K.) California and Kentucky introduced legislation prohibiting its use. Original New York Seltzer tested the Petainer after it was dropped by Coca-Cola, but also met with resistance and dropped the package. Petainer's manufacturer has since sold its equipment to a firm in Japan. (Langer, Tr. 1434-36.)

103. "Glass containers fit the ideal definition of being able to be recycled into the same product an infinite number of times." (CX 91G.) Plastics, according to respondents' expert, has recycling problems:

Polyethylene terephthalate is the principal resin used in soft drink bottle making, and constitutes the most visible problem in connection with packaging solid waste disposal. It cannot be recycled into the same soft drink container because of technical reasons. . . . [P]lastic recycling is estimated at only 1.1 percent of all plastic packaging materials used.

Normal micro biological action has little or no effect on plastic polymers, which is one of the reasons that they were developed initially and are successful. This property suggests that it is not safe to dispose of plastics in landfills, even though that is where most of them now go.

* * * *

The only present answer to plastic packaging disposal is incineration. PET can be burned safely in a modern incinerator. Most presently operating incinerators, however, cannot safely burn PET or any other plastic. . . . This of course increases costs and raises the question of whether the burning of the plastic will ever prove to be economical, even considering the plastic's high energy content. [CX 91I.]

104. Glass and metal can be recycled into the same products. Plastics used for food packaging have no potential for recycling into the same package type; and there is not a big enough market in other end-use products to accommodate even the present quantity of plastic packaging waste. While incineration for its fuel value is a potential solution, there are serious questions regarding the safety of emissions from present incinerators. Until these problems are solved, the long range prospects for plastics are increasingly uncertain. (Zabinko, Tr. 5407; CX 87E.)

C. Use

1. Baby food and baby juice

105. Glass containers for baby food and baby juice are clear, impermeable, retortable, rigid, reclosable, inert, microwaveable and low cost. (Jones, Tr. 512-13; Rottman, Tr. 918; CX 2125A.) Sales of glass jars for this use in 1986 amounted to \$107 million. (CX 35.)

106. Glass is the only container with all the features required for baby food and baby juice. (Rottman, Tr. 921-22.)

107. Clarity is important because of consumer preference. (Jones, Tr. 513-14; Rottman, Tr. 919; CX 2125A.) Metal cans are not clear. (Jones, Tr. 581.)

108. Impermeability prevents oxygen from entering the product and spoiling it, provides increased shelf-life, keeps the product sterilized and maintains nutrition. (Jones, Tr. 519; Rottman, Tr.

919.)⁵ Gerber and Beech-Nut require a shelf-life of two years, which glass containers provide. (Jones, Tr. 514, 587-88; Rottman, Tr. 921.)

109. Plastic PET containers would not provide acceptable shelf-life. (Jones, Tr. 539, 588.) PET would provide a shelf-life of two months. (CX 2212A.) Multi-layer plastic currently provides shelf-life only for certain flavors that are less oxygen-sensitive than others. (Jones, Tr. 585; Rottman, Tr. 926.)

110. High-temperature packing is necessary for baby food and baby juice containers. (Jones, Tr. 514-16; Rottman, Tr. 911-12, 920.) About 50% of baby foods are retorted. (Rottman, Tr. 912.) Juices and the remaining 50% are hot-filled (filled at temperatures from 190-215 degrees for sterilization). The initial filling for both hot-fill and retorted products is the same. The product is filled into the container while hot. Next the product is put in steam and the cap is applied. As the steam condenses, it draws the closure button down. "Hot-fill" foods are kept at their filling temperature for 10-15 minutes. Foods requiring retort are put in pressure cookers (or "retorts") and cooked at 250 degrees. (Rottman, Tr. 911.)

111. Glass is rigid and permits the use of tamper-evident closures with safety buttons. Plastic containers for baby food would require a more costly closure than glass containers. (Jones, Tr. 517, 527.)

112. The rigidity of glass also makes possible high-speed filling lines. (Jones, Tr. 517-18; Rottman, Tr. 913.) Plastic containers would require new filling equipment. (Rottman, Tr. 912.) The slower production rate with plastic containers would require twice as many lines as glass. (Jones, Tr. 529.)

113. Stacking plastic would require stronger corrugated containers to achieve the same vertical stacking strength as glass. (Jones, Tr. 517, 529, 545; Rottman, Tr. 920; CX 1459C.)

114. Glass containers can be resealed and stored for later use. (Jones, Tr. 519.) Metal cans are not readily resealable. (Jones, Tr. 581.)

⁵ Paper cartons used for dry baby cereals cannot package strained baby food. (Rottman, Tr. 913-14; Jones, Tr. 507-08.) When Beech-Nut sets the price for its processed baby food, it does not take into account the price of dry cereal. Jones, Tr. 508.)

115. Inertness of baby food and baby juice containers prevents the flavor of the product from being absorbed into the container and the container from imparting taste to the product. (Jones, Tr. 520-21.) Some plastics absorb flavor into the contents. (Rottman, Tr. 919.)

116. Microwaveability is important for baby food. (Jones, Tr. 519-20.)

117. There is no clear plastic container commercially available in the United States today that could be used for retorted baby food products. (Jones, Tr. 525; Rottman, Tr. 922- 24; Gigliotti, Tr. 5689-90, 5736, 5748.) Plastic tends to soften at high temperatures, which would distort the container. (Rottman, Tr. 925.) Retortable plastic containers are not clear, are higher price than glass, and do not have screw-top resealability. (Gigliotti, Tr. 5715, 5717, 5728.)

118. There is no clear wide-mouth plastic container commercially available in the United States today that could be used for hot-filled baby food or baby juice products. (Zoon, Tr. 55; Carter, Tr. 2532, 2587; Zabinko, Tr. 5422, 5425.) Plastic containers could be used for some wide-mouth hot-fill products, but these containers are not clear, are high cost, and provide a reduced shelf-life. (Rottman, Tr. 925-26.)

119. Beech-Nut concluded that there were several "obstacles" to plastic containers for baby food and baby juice, including: closure, cost, production and warehousing. (CX 1459B-C.)

120. With present technology, the cost of any plastic container that could be used for baby food would be far in excess of the cost of glass. (Blecharz, Tr. 4877; Jones, Tr. 523-24.)

121. A plastic container for baby food would require from a year and one-half to three years to develop. (CX 1459C; CX 2113A.)

122. Producers of baby food and baby juice would not shift from glass to plastic if the price of glass containers were to increase by 5-10%. (Jones, Tr. 529, 535; Rottman, Tr. 934.)

123. If the price of glass containers were to increase by 5-10%, producers of baby food and baby juice would not shift to metal containers because cans are not clear or resealable, and do not project the same quality image as glass. (Jones, Tr. 521-22; Rottman, Tr. 922-23, 934.)

124. It may be five years before a clear, high barrier, retortable, plastic container that is cost competitive with glass will become

commercially available to package baby food. (Rottman, Tr. 933; Zabinko, Tr. 5400.)

125. In late 1986 or 1987, Gerber began marketing some of its baby juice in a 4.0 ounce plastic "Gamma" container produced by American-National Can. (Jones, Tr. 530-32; Rottman, Tr. 927-28.) This container took about two years to develop. (Rottman, Tr. 927.)

126. Gerber's purchases of the Gamma container is one-half of one percent of its annual volume of its container purchases. Gerber also packages baby juice in plastic 750 milliliter container. (Rottman, Tr. 908.) Its purchases of the 750 milliliter container is about 1% of its total. (Rottman, Tr. 908.) Gerber had to install new filling lines to accommodate the plastic juice containers. (Rottman, Tr. 912.)

127. The Gamma container used by Gerber for juice is not clear like glass, but rather is translucent or "contact clear," (the color of the contents is only partly discernible). (Jones, Tr. 533.) The marketing department at Beech-Nut believes that the container has insufficient clarity for Beech-Nut's products. (Jones, Tr. 584.)

128. The Gamma containers for juice are multi-layer, but are not impermeable. (Rottman, Tr. 929.) They provide less shelf-life than glass. (Jones, Tr. 585.)

129. Gerber has had no savings in freight that resulted from the lighter weight of plastic. (Rottman, Tr. 930.) The plastic containers for juice are weaker than glass. (Rottman, Tr. 930.) As a result, juices packaged in plastic cannot be stacked as high as glass during storage and distribution. (Rottman, Tr. 930.)

130. These plastic containers for juice cost twice as much as glass. (Rottman, Tr. 924, 927; Jones, Tr. 533.) Gerber's 4.0 ounce juice in plastic sells for more at retail than glass. (Rottman, Tr. 927 (juice in plastic priced at \$.07 more than glass, or about a 20-25% premium).)

131. Gerber's 4 oz. plastic juice containers have not been successful and the company is not planning to extend its marketing beyond its current limited geographic area because "consumers seem to prefer the glass container for those items." (Rottman, Tr. 927-28.)

132. Plastic baby juice containers have a high price relative to glass, as well as other problems. (Zoon, Tr. 53; CX 402B; CX 2128B.) However, Heinz's 25.3 oz. plastic container replaced a glass

container, and 50% of Heinz baby juice sales are packaged in plastic containers. (Blecharz, Tr. 4857.)

133. Mr. Lanigan, Owens' Chairman, does not believe that plastic is an alternative today for baby food. (CX 1224 at 32.)

2. Spaghetti sauce

134. Sales of glass spaghetti sauce jars in 1986 amounted to \$115 million. (CX 35.) The sale of spaghetti sauce packaged in glass containers has increased five fold in the last fifteen years. This product has largely replaced the use of tomato sauce and tomato paste packaged in cans. (Jardis, Tr. 1412.)

135. Glass spaghetti sauce containers are convenient, resealable, clear, impermeable, inert, recyclable, can be hot-filled, microwaved, and have a quality image. (Jardis, Tr. 1320-21)

136. Spaghetti sauce is hot-filled at 185 to 205 degrees (Jameson, Tr. 797; Jardis, Tr. 1321), and sauce with meat or vegetables is retorted. (Gigliotti, Tr. 5677; Buttermore, CX 24Z19; CX 205Z2.)

137. Metal cans are not a ready substitute for spaghetti sauces packaged in glass because cans are difficult to open, are not resealable, not clear, perceived to impart a "tinny taste" and perceived to be an inferior package in terms of quality. (Jameson, Tr. 795; Jardis, Tr. 1321, 1325; Buttermore, CX 24Z25.)

138. Producers of spaghetti sauce who use glass containers would not switch to metal cans if the price of glass containers were to increase by 20%. (Jameson, Tr. 795; Jardis, Tr. 1325.)

139. Hunt-Wesson introduced spaghetti sauce in a can two years ago (Stollsteimer, Tr. 4317), on January 31, 1987; the retail selling price for Hunt's new spaghetti sauce was \$1.99. (CX 2163B.) On January 30, 1988, Hunt's retail price had dropped by 34% to \$1.32, and the company had a share of 4.4%. (CX 2163B.) Eleven months later, the product's retail selling price dropped 17% to \$1.10 and its share dropped to 4.3%. (CX 2163C.)

140. Plastic containers would not be an acceptable substitute for glass because of clarity, shelf-life and permeability problems, the lack of rigidity that would cause plastic to collapse under a vacuum, and the unavailability of a wide-mouth, clear, hot-fillable container. (Jameson, Tr. 795-96; Jardis, Tr. 1330; Carter, Tr. 2532.)

141. There are no commercially available clear wide-mouth plastic containers that could be used for hot-packed food products such as spaghetti sauce. (Jameson, Tr. 824; Jardis, Tr. 1325; Carter, Tr. 2532.)

142. Tomato sauce and spaghetti sauce turn brown from oxidation. (Zabinko, Tr. 5432-33.)

143. Producers of spaghetti sauce who use glass containers would not switch to plastic if the price of glass were to increase by 20%. (Jameson, Tr. 797; Jardis, Tr. 1330.)

144. Ragu tested a plastic container used by "Furmano's," a company with less than one percent of the market. The wall on the container collapsed, it was not possible to get a proper seal on the container, and Ragu deemed the package "unacceptable." (Jameson, Tr. 796.) The package is viewed as "inferior" by Borden because it must be opened with a can opener, has a limited shelf-life, no consumer appeal, lacks a quality image, and is not properly reclosable. (Jardis, Tr. 1327-29, 1368-69.) The price of this product relative to glass is irrelevant to Borden. (Jardis, Tr. 1330.)

145. Owens' own Plastic Products Division has decided not to pursue development of a plastic spaghetti sauce container because of "poor economics." (CX 242A.)

3. Jams and jellies

146. Jams and jellies are hot-packed, and clarity, inertness, impermeability and recloseability are important attributes of glass for this end-use. (F 147-156.) Sales of glass containers for jams and jellies in 1986 amounted to \$66 million. (CX 35.)

147. Clarity is an important attribute of glass in packaging jams, jellies and preserves. Ease of reclosing is also important. (Buttermore, CX 24Z30.) Metal cans do not offer either of these features, and consumers consider them to be unacceptable for packaging jams and jellies. Producers of jams, jellies and preserves would not switch to metal cans if the price of glass were to increase by 5-10 percent. (Rembert, Tr. 144; Clements, Tr. 752; Willers, Tr. 1705-06.)

148. Containers for jams, jellies and preserves must withstand high-temperature. These products are filled at 185 to 200 degrees. Hot-filling is necessary to obtain the gel, kill bacteria, and form a

vacuum inside the container to pull down the safety button on the cap. (Willers, Tr. 1704.) This restricts the container to glass which can withstand hot-filling. (Rembert, Tr. 134.)

149. Inertness is important in packaging jams and jellies. (Buttermore, CX 24Z30.)

150. Impermeability is critical for jams and jellies. Some of the fruits used are oxygen-sensitive, so that the container requires a high oxygen barrier. Plastic resins have not proven acceptable. (Erwin, Tr. 5137-38; Zabinko, Tr. 5391, 5447-48; CX 1007G.)

151. There are no clear, wide-mouth hot-fillable plastic containers commercially available in the United States that would meet the requirements for packaging jams, jellies and preserves. (Rembert, Tr. 137; Willers, Tr. 1705-07; Carter, Tr. 2532.)

152. Welch packages some jelly in a squeezable plastic container. The container is not clear (Willers, Tr. 1707-08) and has five different layers of plastic. These multiple layers are necessary to serve as an oxygen barrier and to provide rigidity and stability in the hot-fill process. (Rembert, Tr. 135.)

153. To use a squeezable, multi-layer plastic container Welch has to reformulate its jelly and modify filling lines. (Rembert, Tr. 135-36, 139.) The plastic squeeze container runs 25% slower than glass, which increases Welch's product costs. (Rembert, Tr. 139.) Plastic containers have more quality problems than glass on the filling line. (Rembert, Tr. 139-40.)

154. Welch's squeezable plastic package is more costly than glass. (Rembert, Tr. 136.)

155. The squeezable jelly package has problems of its high relative cost, lack of clarity, and difficulty in dispensing all of the product. (Clements, Tr. 754; Willers, Tr. 1707-08.) Welch's sales of squeezable jelly have declined by 50% and the company discontinued several flavors and only grape flavors remain. (Rembert, Tr. 140-41, 246.) Other jelly producers introduced squeezable jelly containers, but withdrew them from the market. (Rembert, Tr. 141; Willers, Tr. 1708; Erwin, Tr. 5136.) The producer of the package, American-National Can, regards the squeezable jelly container as unsuccessful because consumer acceptance is low. (Zoon, Tr. 52; Willers, Tr. 1708.)

156. Welch would not shift more of its jams and jellies into this squeezable plastic container if the price of glass were to increase by 5-10%. (Rembert, Tr. 142.)

4. Pickles

157. In pickle jars, clarity, impermeability, recloseability, relative costs, and the ability to withstand high temperature packing are important attributes of glass. Sales of glass jars for pickles in 1986 amounted to \$111.5 million. (CX 35.)

158. There are three categories of pickles: "fresh pack," "process pack," and "refrigerated." Fresh pack pickles are processed by putting cucumbers into jars with flavors and seasonings, and pasteurizing. Process pack pickles are placed in tanks in brine, vinegar and water, kept there until needed for pickle chips and relishes. Refrigerated pickles are processed like fresh pack pickles, but are not pasteurized. (Faulkner, Tr. 1260.)

159. Clarity is an important attribute of pickle jars for consumers because pickles are an "impulse purchase" item. If the price of glass containers were to increase by 5 to 10 percent, Cates would not switch from glass to metal cans for its retail sizes of pickles. (Faulkner, Tr. 1271.)

160. Resealability and the ability to withstand the high temperatures of pasteurization also are important attributes of containers for pickles. (Buttermore, CX 24Z26-Z27; CX 202G-H.)

161. Impermeability is an important attribute of glass for packaging pickles because of the long shelf-life required. (Faulkner, Tr. 1265; CX 202G.) Some institutional pickles are packed in large plastic containers. (Faulkner, Tr. 1286; RX 1002F.) Shelf-life is reduced to about six months because of oxygen permeation and the transfer of a plastic taste to the pickles. Such problems do not occur with glass containers. (Faulkner, Tr. 1305.) Brockway acknowledges that plastic does not provide sufficient shelf-life for packaging pickles. (Coakley, CX 23Z78-Z79.)

162. Based on an evaluation of a possible plastic pickle container designed by Owens, Cates concluded that plastic would be approximately 60% more expensive than glass for a container that was not clear. (Faulkner, Tr. 1265-67.)

163. There is no clear, wide-mouth plastic container that is economically feasible for packaging retail sizes of hot-packed pickles. (Zoon, Tr. 55; Faulkner, Tr. 1265; Carter, Tr. 2532.)

164. Cates began marketing some of its relish in a squeezable plastic container about two years ago. The product "has not been successful" because of dispensing problems and the relative cost of the package; only about "1 percent or less" of Cates' relish sales are in this squeezable plastic container, with the remainder in glass. (Faulkner, Tr. 1267-69.) On the other hand, Heinz's pickle relish is packed in a squeezable plastic container and achieved a 48% share of the market in 1988. (RX 1029G.)

5. Shelf-stable juice

165. Shelf-stable juice is sold in cans and in glass and plastic containers, and in aseptic cartons. About 47% of retail sales of shelf-stable juice is in non-glass containers. (Bourque, Tr. 2062, 2102-08; Bachey, Tr. 3329-30.) Sales of glass containers for shelf-stable juice in 1986 amounted to \$260 million. (CX 35.)

166. Shelf-stable juices are juices that are packaged and sold without refrigeration or chilling. (Rembert, Tr. 144.) These products are hot-filled at 180 to 195 degrees. (Langer, Tr. 1436.) The purpose of hot-filling is to kill microorganisms in the juice and to sterilize the container. (Bourque, Tr. 2064.)

167. Producers of shelf-stable juices who use glass do so because of consumer preference, clarity, taste perceptions, resealability, impermeability, shelf-life, the hot-fill nature of the product, relative costs, image and recyclability concerns. (Rembert, Tr. 147-49; Willers, Tr. 1712, 1716-17; Bourque, Tr. 2065, 2068-69, 2114.)

168. Ocean Spray packages some of its juice products in 5½ ounce metal cans and in 46 ounce metal cans for the institutional food service business. The company does not use metal cans for retail consumer packages because "clarity is an important feature to the consumer." (Bourque, Tr. 2062, 2079.) Beatrice/Hunt-Wesson packages its shelf-stable tomato juice in 5 1/4 oz., 15 oz. and 46 oz. cans. (Stollsteimer, Tr. 4323.) Sales of juice in metal cans have been declining because of relative costs and consumer preferences. (Rembert, Tr. 158-59; CX 266D.)

169. Producers of shelf-stable juice who use glass containers would not shift from glass to metal cans if the price of glass were to increase by from 5% to 20%. (Langer, Tr. 1443; Willers, Tr. 1725.)

170. There is no clear plastic container commercially available in the United States that is cost competitive with glass for the packaging of shelf-stable juices, except for certain juices in the largest sizes. (Zoon, Tr. 56; Rembert, Tr. 149; F 178.) Plastic containers are not used for shelf-stable juices in most sizes because of inadequate shelf-life (Willers, Tr. 1720-21), excessive costs relative to glass (Zoon, Tr. 56), clarity problems (Willers, Tr. 1720-21), lack of rigidity, inability to be hot-filled (Langer, Tr. 1439), and the cost of necessary line modifications. (Rembert, Tr. 153.)

171. Shelf-life is important in the packaging of shelf-stable juices because they are highly sensitive to oxygen, which causes darkening and deterioration of some juices. (Bourque, Tr. 2076-77; CX 269A; CX 938Z65.)

172. Juice producers who use glass would not switch from glass to plastic containers if the price of glass containers were to increase by 5% to 20%.⁶ (Rembert, Tr. 155; Langer, Tr. 1449; Willers, Tr. 1725.)

173. Ocean Spray has recently begun packaging cranberry juice in a 64-ounce heat-set PET container. (Bourque, Tr. 2065, 2073.) Quaker Oats uses a similar container for 64-oz. Gatorade. (Bourque, Tr. 2066-67.) Ocean Spray had been evaluating plastics since the mid-1970's, and it took four years to develop this package. (Bourque, Tr. 2067-68)

174. Welch tested 64 oz. hot-fillable PET juice containers in October 1987 and concluded that plastic cost 38% more than glass. (CX 415C.)

175. Modifications that had to be made to Ocean Spray's lines to run the 64-oz. plastic bottle, involving unpacking equipment, rinsers, fillers, cappers, labelers, and packing equipment. These costs dif-

⁶ Borden packages some of its ReaLemon and ReaLime in small plastic containers that are in the shape of lemons and limes. If the price of glass containers were to increase, Borden would not shift more of its product into these novelty packages. (Willers, Tr. 1726-28.)

ferred by line, but were in excess of \$500,000 per line. (Bourque, Tr. 2071.)

176. Heat-setting is a process that allows PET to be used for some juices that are hot-fillable. (Bourque, Tr. 2065; CX 45E.) Regular PET will deform when filled at a temperature over 165 degrees and, as a result, cannot be used for hot-filled products. (Bourque, Tr. 2065-66.) Heat-set PET is not guaranteed above 190 degrees.

177. This heat-set plastic container would not be acceptable in sizes smaller than 64 oz. because of relative cost and shelf-life problems. As the container size goes down, the cost for plastic versus glass increases, so that the price premium for smaller sizes would be greater than it is in the 64 oz. size. (Bourque, Tr. 2075.) In addition, shelf-life decreases as the plastic container size gets smaller because there is more product (relative to volume) exposed to the walls of the container.⁷ (Rembert, Tr. 154; Bourque, Tr. 2076.)

178. Ocean Spray markets only cranberry-based flavors in the 64 oz. heat-set PET container because there might be a reduction in shelf-life for citrus juices. (Bourque, Tr. 2073.)

179. The 64 oz. heat-set PET container costs more to run on the filling lines because plastic is not as stable as glass, so the lines have to run slower. (Rembert, Tr. 152; CX 415A.) There are problems with leakage (Rembert, Tr. 154, 227; CX 415A), labeling (CX 415B), collapsing during hot-filling (CX 415C), and absorption of flavors. (CX 88B.)

180. Welch's evaluated a 64 oz. plastic container, but determined that it would not be a suitable substitute for glass. (Rembert, Tr. 150-51; CX 415A-D, CX 1456.)

181. Some juices are packaged in aseptic cartons for children's lunch boxes. (Rembert, Tr. 160-61.)

182. Aseptic packages have high cost relative to glass, short shelf-life (6 months for aseptic, two years for glass), leakage, and slow filling line speeds causes difficulties with stacking, vending, retail costs, and brand image. (CX 51Q; CX 265B; CX 266C-D; CX 1022Z141-Z142; CX 1023L.)

⁷ Because of its impermeable nature, this is not true of glass. (Rembert, Tr. 155.)

183. Respondents' expert, Mr. Cavanagh, concluded that "hot-filled juice drinks will remain a large glass market" despite aseptics, "based in part on consumer mistrust of aseptic cartons, and the presence of a more convenient reclosure feature on most glass bottles." (CX 90I.) Kraft has evaluated aseptic packaging for juices, but decided not to go forward with it because "people wouldn't buy it." (Erwin, Tr. 5138-39.)

184. If the price of glass containers increased 5 to 10%, juice producers who use glass would not shift more to aseptic packages. (Rembert, Tr. 161; Bourque, Tr. 2081.)

6. Mayonnaise

185. Glass containers are used for mayonnaise and other spoonable dressings. In this end-use, clarity, recloseability, relative costs, impermeability and quality image distinguish glass from other types of containers. (F 186-190.) Sales of glass jars for this use in 1986 amounted to \$129 million. (CX 35.)

186. Clarity is important for mayonnaise containers because consumers want to see the color and consistency of the product. (Mitchell, Tr. 659; Willers, Tr. 1695; Buttermore, CX 24Z25.)

187. Impermeability is important because the product is oxygen-sensitive. (Clements, Tr. 756-57; Willers, Tr. 1695; Buttermore, CX 24Z25.)

188. The image that the glass container projects to the consumer is important in marketing mayonnaise.⁸ (Mitchell, Tr. 659; Willers, Tr. 1696.)

189. Recloseability is an important attribute of mayonnaise containers. (Buttermore, CX 24Z25.)

190. Only glass containers fulfill the necessary requirements for the consumer sizes of mayonnaise.⁹ (Willers, Tr. 1696, 1821; Trumbull, CX 25Z52.)

⁸ Hellmann's mayonnaise is packaged in a plastic tube "in Europe someplace." The American consumer has a different taste perception of how mayonnaise should be packaged. (Mitchell, Tr. 667-68; Gigliotti, Tr. 5718-19.)

⁹ The U.S. Government's bid programs for gallon mayonnaise require that the product be in glass. (Willers, Tr. 1812, 1829.)

191. Metal cans "would be out of the question" for mayonnaise because they lack clarity and metal would not be acceptable with consumers. (Mitchell, Tr. 659-60, 670; Willers, Tr. 1696.) Metal may react with the acid and high vinegar content of mayonnaise and spoonable dressings. (Mitchell, Tr. 659-60; Willers, Tr. 1697.) If the price of glass mayonnaise jars were to increase by 5-10%, producers of mayonnaise would not switch to metal cans. (Mitchell, Tr. 670; Clements, Tr. 758; Willers, Tr. 1697.)

192. Wide-mouth plastic containers would not be acceptable to Borden for packaging mayonnaise for the retail trade. Part of Borden's sales of mayonnaise to the institutional trade, however, is packaged in plastic containers. (Willers, Tr. 1812, 1829.) So are those of CPC International. (Mitchell, Tr. 655.) The record does not show the amount of these sales. (Willers, Tr. 1697-98.)

193. Wide-mouth plastic containers sink in due to plastic's inability to sustain a vacuum. (Mitchell, Tr. 679-80; Willers, Tr. 1698.) Wide-mouth plastic containers do not have good shelf-life. (Clements, Tr. 759; Willers, Tr. 1698; CX 2211.)

194. Plastic containers are 25-30% more costly than comparable glass containers. (Mitchell, Tr. 660, 669; Erwin, Tr. 5113-14; CX 2211.)

195. If the price of glass containers were to increase by 5 to 10 percent, major producers of mayonnaise would not switch to plastic. (Mitchell, Tr. 668-69; Clements, Tr. 759; Willers, Tr. 1698.) Plastic would require an expenditure of \$9-10 million for plant conversions plus an additional \$5 million for molds. (Mitchell, Tr. 687.)

196. A small West Coast regional mayonnaise producer called "Saffola" uses plastic packaging. There are problems with paneling with this product. (Mitchell, Tr. 680.) Mayonnaise contains oils and if it is packed in plastic, oils show up as a film on top of the mayonnaise. (Erwin, Tr. 5114.) Saffola mayonnaise (RX 80Y) contains such oil separation, while Kraft's mayonnaise packaged in glass does not. (Erwin, Tr. 5116.)

197. Kraft markets some mayonnaise in a high-barrier, squeezable plastic container which has not been successful. (Zoon, Tr. 52; Willers, Tr. 1700; Erwin, Tr. 5103; CX 226D.) This container is not intended to replace glass but to encourage mayonnaise use as sandwich spread. (Erwin, Tr. 5103.) When the package is nearly

empty it is difficult to squeeze mayonnaise out. (Erwin, Tr. 5105-07.) Other members of the industry have reservations about the acceptability of the package. (Zoon, Tr. 52; Mitchell, Tr. 680-81; Willers, Tr. 1701.) Kraft's squeezable mayonnaise package peaked at a 1.5% share of the market in July, 1986 then dropped to a .7% share by year end. (CX 253.)

7. Wine

198. Imported wines, which do not use domestic glass, amounted to about 25% of the domestic market. (CX 90B, 90Q; 915V; CX 917F.) Major vintners, with their own glass plants, produced about 40% of all wine bottles. (CX 915V; CX 917F.) In 1986, Brockway had 2.4% of the wine market and planned expansion. (CX 903"O", CX 903Z5.) In a 1987-1989 strategic plan, Owens estimated that it had 50% of the non-self-manufacture glass wine bottle market and 18.3% of the total market. (CX 927Z6; CX 929V.)

199. There are no commercially viable substitutes for glass for premium wines. (Gigliotti, Tr. 5630; Cavanagh, CX 86D.) Attributes of glass that make the demand for glass wine bottles inelastic: quality image, impermeability, rigidity, consumer preference and clarity. (F 200-207.) Glass is a "higher quality product than other packaging mediums." (Wilson, Tr. 2213.) Impermeability is important because wines may be kept in the bottle for a long period of time, so that shelf-life is "critical" to ensure that oxidation does not take place that would destroy the product. (Smith, Tr. 1939.) Rigidity is important because most wine bottles are sealed with a cork, and the finish area dimensions are critical to having a tight seal on the container. (Wilson, Tr. 2213.) Consumer preference and clarity are also important factors. (Wilson, Tr. 2215; Carter, Tr. 2587-88.) As Mr. Holzapfel of Owens remarked (CX 1019C):

Some products just naturally 'belong' in glass and will probably never be packaged in anything else. Wine's an excellent example. I find it difficult to imagine a fine California Cabernet Sauvignon in anything other than a glass bottle.

200. Metal cans are not acceptable substitutes for wine for image and marketing reasons. (Smith, Tr. 1939.) The metallic taste of the

can may interfere with the taste of the product. Cans are not clear, and for some wines the color and clarity of the product are important. (Wilson, Tr. 2215.) If the price of glass wine bottles were to increase by 10%, it is unlikely that wineries would switch to cans. (Wilson, Tr. 2215-16.)

201. Plastic bottles would not be an acceptable substitute for glass in premium wines.¹⁰ There is no clear plastic container commercially available in the United States that is cost competitive with glass for the packaging of premium wine. (Zoon, Tr. 56.)

202. Plastic is not an acceptable substitute for glass for premium wine because glass has a "premium" image and because of oxidation problems. (Smith, Tr. 1940; Wilson, Tr. 2216.)

203. Unlike plastic, glass does not create oxidation problems. The shelf-life of wine packaged in glass is measured in years, while in plastic the shelf-life would be "less than six months." (Smith, Tr. 1940; Wilson, Tr. 2217.) Some wines are aged in the bottle, and for such wines plastic would not be acceptable because of oxygen permeation and because plastic containers would not permit the use of a cork. (Wilson, Tr. 2236-37.)

204. It is unlikely that wineries would switch to plastic if the price of glass were to increase by 10%. (Smith, Tr. 1940; Wilson, Tr. 2218, 2274.)

205. Plastic containers for wine have been used in very small sizes, which are used on airlines. (Gump, Tr. 4263.) Owens, however, acknowledges (CX 1022Z88):

Wine makers are extremely concerned about 'image,' and only glass carries the premium quality image with which wine makers want to be associated. PET has made some overtures to the industry, but plastic not only lacks the image but it suggests some serious shelf-life and storage problems. It is unlikely that PET will ever be a viable material for smaller sizes where there would be no significant bottle cost savings or advantages.

¹⁰ A premium wine (such as a chardonnay) obtains from 75% to 100% of its juice from a specific "high-end" varietal grape. A "jug wine" is produced by blending various grape varietals, such as, green grapes found in grocery stores. (Wilson, Tr. 2211.)

206. Several companies who attempted to produce large size plastic wine bottles, including Owens, have left the business because of poor profitability and consumer preference for glass. (Carter, Tr. 2534; Trumbull, Tr. 4176-78.)

207. Some jug wines are packaged in "bag-in-the-box" containers. However, these are not an acceptable substitute for premium wines because of quality considerations. (Wilson, Tr. 2219, 2236.) It is unlikely that an increase of glass container prices by 10% would result in wineries shifting to bag-in-the-box containers. (Wilson, Tr. 2220.)

208. Respondents do not view other containers as a threat to glass in the wine market due to image, shelf-life, and consumer preference. (CX 49H; CX 63A; CX316Z14; CX 922Q; CX 928B.)

209. Owens does not price wine bottles competitively with PET in large-size "jug" wine. According to a study of the 3-4 liter wine market conducted by Owens in 1984, "O-I glass does not intend to chase PET containers with a low price strategy of its own in the 3-4 liter wine market." (CX 314I.) Wine is one of Owens' most profitable markets. (CX 915W; CX 917G, Y; CX 929V.)

8. Wine coolers

210. Since their introduction in 1983, wine coolers (a carbonated blend of wine and fruit juice usually sold in tall 12 oz. single-serve glass bottles) have been the fastest growing beverage in the United States, and by 1987 the number of glass containers used for wine coolers surpassed those used for traditional wine. (CX 86D; CX 90Q; CX 929U; CX 1022Z71.)

211. Wine coolers are almost exclusively sold in glass bottles.¹¹ (CX 51M; CX 335D; CX 1022Z78.) Quality image and impermeability are important factors in that decision. (Smith, Tr. 1931.) Metal cans are not an alternative to glass bottles. Seagram test-marketed wine coolers in cans and "the results were disastrous" and

¹¹ Respondents' evidence to the contrary included uncarbonated wine, wine of small companies, wine sold in other countries, and wine sold to the institutional market.

"there was, essentially, no consumer acceptance." (Smith, Tr. 1932-33.)

212. Gallo and Seagrams, with 68% of the wine cooler sales, both manufacture some glass containers. (Smith, Tr. 2031-32.) Seagrams does not manufacture glass containers for wine coolers, and buys them from Owens instead, primarily because of the high cost of automated, high production equipment necessary to go into the business. (Smith, Tr. 1960, 61.) Owens has about 40% market share in unit production of glass bottles for wine coolers. (CX 927Z6.) Brockway supplied several major packers of wine coolers and planned to increase its market share. (CX 903Z5.)

213. Plastic containers are not an alternative to glass because of image and shelf-life problems. (Smith, Tr. 1933.) There is no clear plastic container commercially available in the United States that is cost competitive with glass for the packaging of 12-ounce wine coolers. (Zoon, Tr. 56; CX 90R.)

9. Distilled spirits

214. Per capita liquor consumption has been falling. Shipments of glass liquor bottlers fell 33% from 1980 to 1986 and has continued to fall. (CX 905; CX 917D; F 215, 216, 219, 224, 225.)

215. There has been a steady loss of the market to plastic bottles. (CX 922N, P; CX 927T.) The 1.75 liter size PET was lower in cost than glass in 1987. (CX 932Z141.)

216. Owens is the largest supplier of glass liquor bottles. (CX 917D.) Owens' market share was about 20% in 1986. (CX 918F; CX 922N; CX 934E.)

217. In 1983, liquor was produced in the United States in the following sizes (CX 317Z16):

<u>Size</u>	
50 ml.	9%
200 ml.	23%
375/500 ml.	11%
750 ml.	22%
1 liter	21%
1. 75 liter	14%

218. Miniature liquor bottles in the 50 ml. size converted to plastic in 1983 because of demand from airlines for reduced weight. (Smith, Tr. 1920-21.) Plastic also has had success in "traveler" packages where the lighter weight of plastic makes the container preferable to glass. (Smith, Tr. 2038-39.)

219. In October 1986, Owens estimated that 20% of the 1.75 liter size was being filled in plastic and projected that 80% would be converted to PET by 1991. (CX 49H-I.)

220. By 1988, Seagrams, the market share leader (CX 317W), already had 85-90% of its 1.75 liter size, which is 20% of its liquor sales, in PET. (Smith, Tr. 1969-70.) Heublin, the second largest distiller with 10% of the market, uses plastic for 50 ml. and part of its 1.75 liter production in lower priced vodkas. (CX 1022Z97-98.) National, the number three distiller with 8% market share, uses PET in 50 ml., its 750 ml. traveler bottle, and a major part of its 1.75 liter production. It also has tested PET in 1-liter. (CX 932Z141.)

221. There is no technical reason why distilled liquors could not be packaged in plastic in all sizes. (Smith, Tr. 1983-84.)

222. The quality image of glass remains more important than the lighter weight of plastic for distilled spirits in the 200 ml., 375 ml., 750 ml. and 1-liter sizes. (Smith, Tr. 1921, 1923; CX 1022Z98.)

223. Seagrams is the leading distiller with about 15% of the market. (CX 317W.) Seagrams premium brands and sizes from 200 ml. through 1 liter are sold in glass, because of its quality image and because glass makes the smaller sizes look bigger in glass than in plastic. The 750 ml. size is 40% of Seagram's sales; the 1 liter is 20%. (Smith, Tr. 1928-29, 1967.) They have tested the middle sizes in plastic but had no plans to convert in 1987. (CX 932Z149.)

224. Johnson Controls, the leading producer of PET, makes clear PET container for packaging liquor in 1.75 liter, 1-liter, 750 ml., 375 ml., and 200 ml. sizes (Zabinko, Tr. 5380-81), and sells these containers to Jim Beam, Hiram Walker, Glenmore Distilleries, A. Smith Bowman, and Florida Distilleries. (Zabinko, Tr. 5382.) PET is used for lower priced liquors. (CX 1022Z98.)

225. Cans are not used for distilled spirits because of image. (Smith, Tr. 1927.)

10. Single-serve soft drinks

226. Soft drinks are packaged in 12 oz. cans; 10 oz., 16 oz. and 1-liter glass bottles; 1, 2, and 3 liter PET bottles; and, in some areas 16 oz. or ½ liter PET. "Single-serve" in "take-home" soft drinks include 16 oz. and below. (Cavanagh, CX 90.)

227. Most glass soft drink bottles are 10 oz.¹² or 16 oz. "Plasti-Shield" bottle introduced by Owens in the late 1970's. (Lemieux, CX 26Z17.) These plasti-shield bottles differ only in the label and the cap. (Kalil, Tr. 2392-95.) They are lighter than regular glass bottles and stronger because of the wrap-around styrofoam label which cushions the bottle and allows the glass to be thinner and lighter. (Langer, Tr. 1431.) Glass container producers are licensed by Owens to produce this container. (Lanigan, Tr. 6223-24.)

228. Many consumers prefer the light weight and convenience of cans, and others prefer glass because of its clarity, image recloseability, the perceived taste of the product.¹³ (Langer, Tr. 1450; Harralson, Tr. 1561, 1564; Ayres, Tr. 1856.)

229. Soft drink mixers are not sold in metal cans because cans are not resealable. Mixers are often resealed for later consumption. (Kalil, Tr. 2357.)

230. Pre-packaged soft drinks in plastic containers and cans account for 30% and 45% of total gallonage, respectively, with the remaining 25% split about evenly between nonreturnable glass containers and refillable glass containers. (RX 878.)

231. Cans account for 46-47% of the volume of RC Cola bottlers, with 2 liter PET accounting for 30-31% and 16 oz. PET and nonreturnable 16 oz. glass containers together accounting for 11%. (Harralson, Tr. 1558, 1560.)

232. Pepsi-Denver's volume is 80% in 12 oz. cans, and 14% in 16 oz. nonreturnable glass containers. (Ayres, Tr. 1847.) Similarly, 80% of Coca-Cola's output in the Denver area is in cans. (Ayres, Tr.

¹² Only glass is used for 10 oz. size carbonated soft drinks. (Harralson, Tr. 1560.)

¹³ Glass is breakable. Cans can break, develop pinholes that leak, or leak from the seal, and destroy other cases. Glass is inert, so that if one bottle breaks, it will not affect other containers. (Langer, Tr. 1452-53; Honickman, Tr. 3824-25.)

1888.) In the Phoenix and Tucson areas, cans account for about 60-65% of the existing packaging mix. (Kalil, Tr. 2421.)

233. Mr. Honickman operates twelve bottling companies on the east coast, including Pepsi-New York; 55% of his production is in 1, 2 and 3 liter plastic bottles; 32% is in 12 oz. metal cans; and 12.5% is divided among 7, 10 and 16 oz. glass containers. (Honickman, Tr. 3813-14.)

234. According to complaint counsel's witness from Leone, which devotes one-third of its production to single-serve glass soft drink bottles (Leone, Tr. 2661, 2691), if the price of these bottles were to increase by 5%, soft drink producers would increase the promotion of products packaged in non-glass containers, specifically the 12 oz. can and the 1 and 2 liter plastic bottle. (Leone, Tr. 2700.) According to Mr. Leone, even if Leone faced no competition from other glass container producers, "we'd have a lot of trouble raising soft drink prices." (Leone, Tr. 2686-87.)

235. In many parts of the country the only soft drink packages available on retail store shelves are 12 oz. cans and plastic containers. (Honickman, Tr. 3866; Haworth, Tr. 3902; Lemieux, Tr. 5517.)

236. An August, 1987 Owens memorandum notes that promotions of cans at \$.99 a six-pack followed by another promotion of a 24-pack of cans at \$4.00 makes "it difficult to promote glass on any kind of consumer savings basis" and is "making it difficult for glass to compete." (RX 24A-B.)

237. Owens developed the 10 oz. and 16 oz. plasti-shield container to compete directly with cans, and now prices the 16 oz. glass package at a level to deter the growth of 16 oz. PET containers. (Lemieux, Tr. 5510.)

238. In single-serve sizes, soft drinks are packaged predominantly in 12 oz. cans. (Kalil, Tr. 2417, 2421; Honickman, Tr. 3814; RX 66A.) About 47% of the production of RC Cola bottlers is packaged in cans, with 16 oz. nonreturnable glass and 16 oz. plastic bottles accounting for 11%, (Harralson, Tr. 1558-59); 70% of Kalil's output of soft drinks is in 12 oz. cans, (Kalil, Tr. 2417); 80% of Pepsi-Denver's volume is in 12 oz. cans, with 16 oz. glass accounting for 14%. (Ayres, Tr. 1847-48.) Johnson Controls, which is the nation's leading supplier of PET soft drink bottles of all sizes, regards cans as its principal competition. (Zabinko, Tr. 5377-78; RX 974G.)

239. In 1987, the sales of soft drinks in single-serve glass containers were 8 billion units while sales of soft drinks in cans were 40 billion units. (RX 66A-B; RX 1003Q.) Cans are the most economical package when filling line efficiencies and other packaging and distributional costs are considered. (Zoon, Tr. 36; Bachey, Tr. 3351-52.)

240. Sixteen ounce PET has been approved for use by all major soft drink companies. (Harralson, Tr. 1670; Honickman, Tr. 3818.)

241. In 1983, 16 oz. PET accounted for 10% of shipments of soft drinks in 16 oz. nonreturnable containers. (RX 1003Q.) By 1987, that percentage had increased to 30%, and sales of 2 billion units. (RX 1003Q.)

242. All national brands are distributed by store door delivery by route salesmen who rotate the stock and pull off out-of-date products. (Honickman, Tr. 3820-21.) For this reason, and also because of the fast retail movement of soft drinks, shelf-life is not considered to be an issue by major bottlers. (Honickman, Tr. 3826; Zabinko, Tr. 5377.)

243. According to Johnson Controls, which is the nation's leading supplier of PET soft drink bottles, "we feel that our price [on 16 oz. PET soft drink bottles] must be at least at parity with the competitive glass package. Sometimes it is below the glass package." (Zabinko, Tr. 5379; RX 974G.)

244. In deposit states where retailers do not want to handle glass, soft drinks are packaged in 16 oz. (or half-liter) PET containers. (Cavanagh, CX 90.)

245. Soft drinks packaged in 16 oz. or ½ liter plastic have less shelf-life (6-12 weeks) than soft drinks in glass (indefinite shelf-life).¹⁴ (Harralson, Tr. 1565.)

246. The higher the temperature, the more quickly carbonation is lost through the plastic and the shorter the shelf-life. (Harralson, Tr. 1570.)

247. Two-liter PET containers provide a longer shelf-life than 16-ounce PET containers due to their smaller surface-to-volume

¹⁴ Aseptic packages cannot be used for carbonated beverages because they do not hold carbonation. (Langer, Tr. 1450.)

ratio. (Harralson, Tr. 1567; Ayres, Tr. 1858, 1878; Kalil, Tr. 2358-59.)

248. These shelf problems with 16 oz. and ½ liter PET are important in small stores and for brands that do not move off the shelf quickly. (Malone, Tr. 5942; CX 66A-B.) Shelf-life is important for brands delivered through warehouses, as opposed to by store-door delivery, because the bottler loses control over rotation of the product. (Langer, Tr. 1440.)

249. On March 16, 1988, glass had a 22% price advantage over 16 oz. PET in addition to the glass cullet (recycling) value. (CX 2444.)

250. The prices of PET containers increased relative to glass during 1988 and probably will not decline for the next several years. (CX 768L, M, P; Towse, CX 1220 at 160-164.)

251. Some bottlers switched into PET from glass because of recent glass shortages. Royal Crown would not have approved 16 oz. PET for use by its bottlers but for supply shortages of glass. (Harralson, Tr. 1575-76, 1614-16; Zabinko, Tr. 5486-87; CX 353.)

252. Some bottlers who switched to 16 oz. PET switched back to glass because of the shelf-life, lower line speeds, and consumer preference. (CX 67B; CX 68; CX 1032N.)

253. Bottlers have not switched from 2-liter PET to glass or metal cans during the 20% price increase in PET resin (and bottle) in the last year. (Ayres, 1859, 1897; Kalil, Tr. 2375-76; Zabinko, Tr. 5465.) Family size soft drinks in 2-liter PET are in a separate market from single-serve soft drinks.

254. The 2-liter PET package started in the late 1970's when it took over the family-size soft drink segment from glass because of its lighter weight. (Honickman, Tr. 3859-60.) Product quality was of little importance in this size; this market required only that the product be cold, sweet and low cost. (CX 90P.)

255. Owens projects glass to continue to do well in soft drinks. (CX 1017G-I.) However, "cans and plastic will continue market pressure on glass. . . ." (CX 915L.)

D. Production

256. Only the current producers of glass containers could switch production of glass containers easily enough to be considered in the relevant market. (F 305-325.)

257. The production of metal cans and plastic containers is different from the process used to make glass containers. Glass containers cannot be produced in metal can plants and plastic containers cannot be produced in glass container plants. (Zoon, Tr. 49-50.)

258. Glass containers are made from sand, soda ash, and limestone, which are mixed together, put into a furnace, and melted. The furnaces melt glass at 3,000 degrees Fahrenheit. Molten glass flows by gravity through a depressed throat into a refining area, where additional heat is applied to ensure total melting. It then flows through a forehearth, a ceramic channel about six inches deep, where the temperature is lowered. (Cavanagh, Tr. 5193-95.)

259. The molten glass drops into the "feeder," a bowl with a hole in the bottom. A plunger moves up and down in the feeder, forcing the molten glass out of the opening where shears cut the stream of glass into "gobs." The gobs drop from the glass feeder, by gravity, into molds on the glass forming machine (usually an "Individual Section" ("IS") machine). (Cavanagh, Tr. 5195.)

260. The feeder cuts one, two, three or four glass gobs simultaneously, with the machine having a matching number of mold cavities per section. The IS machine has from five to ten sections per machine, usually six, eight or ten. A six section single gob machine ("6-single") has six mold cavities producing six containers per cycle; an eight section double ("8-double") has 16 mold cavities producing 16 containers per cycle; and a ten section quad ("10-quad") has 40 mold cavities producing 40 containers per cycle. (Cavanagh, Tr. 5196.)

261. Each gob is blown or pressed into a mold. The formed container exits from the forming machine on a conveyer belt, which carries it to an annealing lehr, an oven-like device, where it is heated up once again. (Cavanagh, Tr. 5197.)

262. From the lehr, the bottle is inspected, returned to the furnace to be re-melted as "cullet" if rejected, or packed for warehousing or shipping. (Zoon, Tr. 40; Cavanagh, Tr. 5198, 5208.)

263. With some limitation, switching from one type or size of glass container to another can be accomplished by changing the molds, so different containers can be produced on each machine. (Cavanagh, Tr. 5206-07.) Changing from one type of container takes five to eight hours. (Zoon, Tr. 42-43.)

264. Producing a gross of 16-ounce soft drink bottles costs from \$8.05 on a 10-quad machine to \$14.70 on a 6-double machine; producing a gross of 12-ounce wine cooler bottles costs from \$7.08 on a 10-quad machine to \$14.36 on a 6-double machine. (CX 78B, E.)

IV. RELEVANT GEOGRAPHIC MARKET

265. Imports account for a small portion of domestic glass container sales: 2.7% of total U.S. dollar sales and 5.57% of total U.S. unit volume. (CX 1514F-G.)¹⁵

266. Domestic glass container customers do not look to foreign suppliers because of high freight costs, poor reliability, a lack of technical support, and quality concerns. (Mitchell, Tr. 666-67; Jameson, Tr. 806-07; Rottman, Tr. 946; Willers, Tr. 1814.)

267. Reliability of supply is critical to glass customers. Instead of storing glass, customers want a flow of trucks coming into their plants, sometimes loading glass directly onto the filling lines. (Mitchell, Tr. 662-63; Jardis, Tr. 1339; Langer, Tr. 1466-67; Smith, Tr. 1943.)

268. Foreign suppliers cannot maintain quality because of their distant locations. (Rottman, Tr. 947; Wilson, Tr. 2275-76.)

269. Customers doubt the quality of glass from foreign sources, especially Mexico. (Mitchell, Tr. 667; Jameson, Tr. 806; Wilson, Tr. 2229-30.)

270. Foreign glass container producers have less efficient production machinery and higher prices than U.S. producers. (Smith, Tr.

¹⁵ Dollars and units of imports differ because imported containers are of small size, such as cosmetic and toiletry bottles. (Nelson, Tr. 2796-97.)

1952; Kalil, Tr. 2386; CX 42D.) Canadian containers are sized differently from the containers made in the United States, and the Canadian glass companies are machined to produce the Canadian sizes. (Rottman, Tr. 946.)

271. Most imported glass containers are specialty items (such as perfume bottles and cosmetic jars or unique colors or designs) produced in low volume. Specialty glass bottles can be economically imported from Europe because of their small size and high value; but "it would not be economical to ship . . . a Ragu bottle" because "you'd be shipping a lot of air space." (Rowe, Tr. 2626.)

272. Few large glass containers are imported. They are unique in design, and are not available in the United States. (Harralson, Tr. 1677-78; Smith, Tr. 2043-48; Wilson, Tr. 2238-39.)

273. Vitro has 75-80% of the Mexican glass container market. (Lemieux, Tr. 5607.) Consumers Glass Co. and Dominion are the only two glass container suppliers in Canada. (Jones, Tr. 588; McMackin, Tr. 5848-49.) Vitro is one of Owens' licensees. (Lemieux, Tr. 5568, 5604.) Consumers was a Brockway licensee since 1961, and is now an Owens licensee. (Lemieux, Tr. 5604.) Dominion licenses Owens' Plasti-shield technology. (CX 1111C.)

274. Consumers has an interlocking directorate with Owens and has maintained interlocking directorates with Brockway for years.¹⁶ (McMackin, Tr. 5851-52.)

275. Because of cost, reliability and quality problems with foreign producers, glass container customers would not switch to foreign producers even if the price of glass containers from domestic producers were to increase by 10 percent. (Jameson, Tr. 806-07; Rottman, Tr. 947; Langer, Tr. 1466-67.)

276. Foreign glass producers are located far from U.S. production facilities. (Silvani, Tr. 3800; Blecharz, Tr. 4960-61; Erwin, Tr. 5163.) Shipping glass over long distances is not a good way to do business. It hurts quality, results in breakage, and could result in losses to the customer because deliveries were not timely. (Coakley, CX 23Z34-Z37.)

¹⁶ Brockway owned 15% of Consumers. (McMackin, Tr. 5848.)

277. The geographic market in which to analyze the competitive effects of the merger is the continental United States. (F 265-276; Owens Answer ¶16; Brockway Answer ¶14.)

278. Owens/Brockway and the other large glass container manufacturers have multiple plants that serve most of the United States. (CX 31; CX 1451F, N-Q; CX 551T-U.) Multiple plants provide a back-up supply where one plant may be running at full capacity, allow producers to spread R&D over a larger base, and save sales costs with respect to large buyers. (F 328-337.)

279. National buyers such as CPC, Ragu, Gerber, and Beech-Nut have plants throughout the country and buy glass containers at uniform prices for all plants. (CX 20D.) Multi-plant customers often receive the same price at all locations, or a slightly higher price for plants located on the West Coast. (Faulkner, Tr. 1275.)

V. MARKET STRUCTURE

A. *Concentration*

280. The Herfindahl-Hirschmann Index ("HHI") is calculated by squaring the individual market share of each firm in the market and summing the squares to derive a single figure. The HHI increases as fewer firms hold larger market shares. (Nelson, Tr. 2782-84.)

281. The acquisition substantially increased concentration in the domestic glass container industry (CX 1451A, F, G, H, M):

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		Concentration Ratios	
	<u>HHI</u>	<u>2-Firm</u>	<u>4-Firm</u>
<u>FURNACE MELT CAPACITY:</u>			
Pre-Merger	1581	48.0	73.5
Increase	656		
Post-Merger	2237	61.8	81.2
<u>DOLLAR SALES:</u>			
Pre-Merger	1507	46.8	60.9
Increase	663		
Post-Merger	2170	60.9	79.6
<u>UNIT SALES:</u>			
Pre-Merger	1514	46.6	70.1
Increase	790		
Post-Merger	2304	61.0	78.5
<u>TONNAGE PRODUCTION:</u>			
Pre-Merger	1518	45.7	71.5
Increase	663		
Post-Merger	2181	60.5	81.1
<u>UNIT PRODUCTION:</u>			
Pre-Merger	1626	47.9	73.3
Increase	852		
Post-Merger	2478	63.6	82.5

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TABLE A

SHARE OF 1987 FURNACE CAPACITY

	Furnace Melt Capacity (Tons Per Day)	Share
Owens-Illinois	11,387	23.68
Brockway	6,656	13.84
Combined Owens/Brockway	18,043	37.52
Anchor/Diamond-Bathurst	11,674	24.28
Ball-Incon	5,617	11.68
Triangle (Foster-Forbes)	3,721	7.74
Gallo	2,055	4.27
Kerr Glass	1,465	3.05
Industrial (Seagram/Tropicana)	1,100	2.29
Liberty Glass	750	1.56
Latchford Glass	703	1.46
Central N.Y. (Miller)	625	1.30
Wheaton Industries	532	1.11
Coors	521	1.08
Glenshaw Glass	520	1.08
Hillsboro (Hiram Walker)	260	.54
Leone Industries	200	.42
Anchor-Hocking (Carr-Lowrey)	165	.34
Arkansas Glass	<u>135</u>	<u>.28</u>
Total	48,086	

Pre-Merger HHI: 1,581
Change: 656
Post-Merger HHI: 2,237

	<u>Pre-Merger</u>	<u>Post-Merger</u>
Two-firm Concentration:	48.0	61.8
Four-firm Concentration:	73.5	81.2

Source : CX 1451A

TABLE B

SHARE OF 1987 DOLLAR SALES

	(\$ 000)	Share
Owens-Illinois	1,152,864	23.59
Brockway	686,874	14.06
Combined Owens/Brockway	1,839,738	37.65
Anchor/Diamond-Bathurst	1,135,421	23.24
Ball-Incon	524,992	10.74
Triangle (Foster-Forbes)	386,900	7.92
Kerr Glass	145,592	2.98
Central N.Y. (Miller)	101,677	2.08
Latchford Glass	101,088	2.07
Wheaton Industries	87,540	1.79
Gallo	86,145	1.76
Coors	72,140	1.48
Industrial (Seagram/Tropicana)	69,693	1.43
Liberty Glass	60,060	1.23
Glenshaw Glass	44,890	.92
Anchor-Hocking (Carr-Lowrey)	29,543	.60
Hillsboro (Hiram Walker)	26,182	.54
Leone Industries	15,200	.31
Arkansas Glass	14,438	.30
Imports - Canada	42,232	.86
Imports - Mexico	25,492	.52
Imports - Other	77,537	1.59
Total Imports	<u>145,261</u>	<u>2.97</u>
Total	4,886,500	
Pre-Merger HHI:	1,507	
Change:	663	
Post-Merger HHI:	2,170	
	<u>Pre-Merger</u>	<u>Post-Merger</u>
Two-firm Concentration:	46.8	60.9
Four-firm Concentration:	71.6	79.6

Source: CX 1451F

TABLE C

SHARE OF 1987 UNIT SALES

	<u>(M GROSS)</u>	<u>Share</u>
Owens- Illinois	85,445	27.42
Brockway	44,876	14.40
Combined Owens/Brockway	130,321	41.82
Anchor/Diamond-Bathurst	59,700	19.16
Triangle (Foster-Forbes)	28,342	9.09
Ball-Incon	26,317	8.44
Kerr Glass	9,022	2.90
Central N.Y. (Miller)	6,324	2.03
Wheaton Industries	5,650	1.81
Coors	5,527	1.77
Liberty Glass	5,383	1.73
Gallo	5,358	1.72
Industrial (Seagram/Tropicana)	3,725	1.20
Latchford Glass	3,407	1.09
Glenshaw Glass	2,115	.68
Anchor-Hocking (Carr-Lowrey)	1,320	.42
Leone Industries	825	.26
Hillsboro (Hiram Walker)	608	.20
Arkansas Glass	338	.11
Imports - Canada	2,708	.87
Imports - Mexico	2,193	.70
Imports - Other	12,454	4.00
Total Imports	<u>17,355</u>	<u>5.57</u>
Total	311,637	

Pre-Merger HHI:	1,514
Change:	790
Post-Merger HHI:	2,304

	<u>Pre-Merger</u>	<u>Post-Merger</u>
Two-firm Concentration:	46.6	61.0
Four-firm Concentration:	70.1	78.5

Source: CX 1451G

TABLE D
SHARE OF 1987 TONNAGE PRODUCTION

	<u>(Tons Produced)</u>	<u>Share</u>
Owens-Illinois	2,589,686	22.52
Brockway	1,692,183	14.72
Combined Owens/Brockway	4,281,869	37.24
Anchor/Diamond-Bathurst	2,670,000	23.22
Ball-Incon	1,264,226	10.99
Triangle (Foster-Forbes)	1,109,883	9.65
Gallo	406,846	3.54
Kerr Glass	371,513	3.23
Latchford Glass	247,900	2.16
Central N.Y. (Miller)	207,997	1.81
Coors	188,538	1.64
Industrial (Seagram/Tropicana)	187,000	1.63
Liberty Glass	182,188	1.58
Wheaton Industries	123,292	1.07
Glenshaw Glass	111,426	.97
Hillsboro (Hiram Walker)	45,704	.40
Arkansas Glass	40,250	.35
Leone Industries	38,000	.33
Anchor-Hocking (Carr-Lowrey)	<u>21,897</u>	<u>.19</u>
Total	11,498,529	
Pre-Merger HHI:	1,518	
Change:	663	
Post-Merger HHI:	2,181	
	<u>Pre-Merger</u>	<u>Post-Merger</u>
Two-firm Concentration:	45.7	60.5
Four-firm Concentration:	71.5	81.1

Source: CX 1451H

TABLE E
SHARE OF 1987 UNIT PRODUCTION

	<u>(M GROSS)</u>	<u>Share</u>
Owens-Illinois	79,188	27.07
Brockway	46,028	15.74
Combined Owens/Brockway	125,216	42.81
Anchor/Diamond-Bathurst	60,932	20.83
Triangle (Foster-Forbes)	28,341	9.69
Ball-Incon	26,725	9.14
Kerr Glass	9,331	3.19
Wheaton Industries	6,605	2.26
Central N.Y. (Miller)	6,324	2.16
Liberty Glass	5,625	1.92
Coors	5,527	1.89
Gallo	5,384	1.84
Industrial (Seagram/Tropicana)	3,600	1.23
Latchford Glass	3,413	1.17
Glenshaw Glass	2,115	.72
Anchor-Hocking (Carr-Lowrey)	1,373	.47
Leone Industries	1,028	.35
Hillsboro (Hiram Walker)	614	.21
Arkansas Glass	343	.12
Total	292,496	

Pre-Merger HHI: 1,626
Change: 852
Post-Merger HHI: 2,478

	<u>Pre-Merger</u>	<u>Post-Merger</u>
Two-firm Concentration:	47.9	63.6
Four-firm Concentration:	73.3	82.5

Source: CX 1451M

282. Owens' own estimates of market share show that high concentration exists in end-use categories as a result of this acquisition.

TABLE F
SHARES OF 1986 UNIT SHIPMENTS BY END USE

	<u>Soft Drinks</u>	<u>Wine</u>	<u>Liquor</u>	<u>Food</u>
O-I	39.9	26.9	22.2	15.7
Brockway	16.0	7.4	8.0	18.8
Anchor/DB	20.4	18.7	41.4	22.0
Triangle	9.2	.1	6.5	6.0
Ball-Incon	2.9	9.7	2.2	18.8
Kerr	---.-	---.-	---.-	9.5
Gallo	---.-	35.6	---.-	---.-
Wheaton*	---.-	---.-	---.-	---.-
Miller*	---.-	---.-	---.-	---.-
Latchford	---.-	1.6	8.3	2.6
Liberty	6.9	---.-	---.-	---.-
Tropicana	---.-	---.-	5.0	3.7
Coors*	---.-	---.-	---.-	---.-
Glenshaw	3.3	---.-	---.-	1.5
Anchor Hocking*	---.-	---.-	---.-	---.-
Hillsboro	---.-	---.-	6.4	---.-
Arkansas	---.-	---.-	---.-	1.4
Leone	1.4	---.-	---.-	---.-
Total:	100.0	100.0	100.0	100.0
Pre-Merger HHI	2,418	2,492	2,453	1,588
Change	1,277	398	355	590
Post-Merger HHI	3,695	2,890	2,808	2,178
Pre-Merger				
C2 Ratio	60.3	62.5	63.6	40.8
Post-Merger				
C2 Ratio	76.3	69.9	71.6	56.5
Pre-Merger				
C4 Ratio	85.5	90.9	79.9	75.3
Post-Merger				
C4 Ratio	92.4	98.3	86.4	84.8

*Wheaton and Anchor Hocking participate almost exclusively in the drug and cosmetics portion of the industry; Miller and Coors participate only in beer.

Source: CX 30F; CX-41

B. Buyers

283. Owens-Brockway's largest customer, the Pepsi Bottling Group in soft drinks, accounts for 3.3% of Owens-Brockway's sales. (CX 1153A; CX 1451F.) The largest food customer, Heinz, accounts for less than 3% of total sales. (CX 1153A; CX 1451F.) The top 50 customers account for 51% of Owens-Brockway's sales. (CX 1153B; CX 1451F.) None of the customers who testified that there were no viable substitutes for glass, represented as much as 2.5% of total glass container purchases (\$100 million), even though many of them are among the leading producers in their end-uses:

<u>Company</u>	<u>Glass Purchases</u> <u>(\$ Millions)</u>	
Beech-Nut Nutrition	\$21.0	(Tr. 510)
Borden, Inc.	23.5	(Tr. 1319)
Charles F. Cates & Sons	6.0	(Tr. 1264)
Clements Food Co.	4.3	(Tr. 739)
CPC International	45.0	(Tr. 658)
Gerber Products Co.	50.0+	(Tr. 908)
Kalil Bottling Co.	2.0	(Tr. 2352)
L & A Juice Co.	4.5	(Tr. 1427)
Ocean Spray	80.0	(Tr. 2063)
Pepsi-Cola of Denver	3.0	(Tr. 1848)
Ragu	52.0	(Tr. 794)
Joseph E. Seagram & Sons	92.0	(Tr. 1955)
Welch Foods	25.0	(Tr. 131)
Wine World	10.0	(Tr. 2234)
Total	\$418.3+	

284. Customers do not know costs or what productivity gains have been achieved by Owens or the glass industry. (Rottman, 984-85; Faulkner, Tr. 1310-11; Smith, Tr. 2049-50; Honickman, Tr. 3877; Lankester, Tr. 4068; Stollsteimer, Tr. 4365-66; Blecharz, Tr. 4969-72.)

285. Buyer power is an unlikely source of defeating an attempt to price anticompetitively in this industry. (Nelson, Tr. 2845-46.)

286. Many glass containers are made from molds. (Jones, Tr. 555; Jardis, Tr. 1421; Blecharz, Tr. 4963-64.) It is not likely that a

customer would be willing to sell such containers to others. (Nelson, Tr. 2847-49, 2852-53.)

287. Companies have used proprietary molds because of image, and marketing and production line capabilities, even though stock bottles were cheaper. (Lemieux, Tr. 5596-98.)

288. Containers that look similar are not necessarily interchangeable, due to minor variations in height, diameter, shoulder positioning, cap thread size and style, thickness, and surface. Slight variations can result in jamming on the filling lines, breakage and downtime. (Mitchell, Tr. 665-66; Clements, Tr. 764-65; Jameson, Tr. 804.) Containers that are not identical cannot be interchanged on high speed filling lines without modifications to the glass, which may require substantial time. (Blecharz, Tr. 4967.)

289. Because containers are used for food and beverages, they must meet high quality standards. (Mitchell, Tr. 664-65; Rottman, Tr. 943; Jardis, Tr. 1344-45.)

290. Arbitrage¹⁷ is limited by costs. Since a third party is involved, resale would involve additional shipping costs, additional risk of breakage, billing costs, and additional profit. (Jones, Tr. 555; Clements, Tr. 765-66.)

291. Some containers are sold pre-labeled, and it is unlikely that a customer would use a bottle or carton with a competitor's name on it. (Rembert, Tr. 174; Langer, Tr. 1522.)

292. Buyers deal directly with the manufacturer for technical assistance in running the containers, to handle defects, and to ensure reliable supply. (Rottman, Tr. 943; Jardis, Tr. 1345; Langer, Tr. 1521-22.)

293. Owens-Brockway accounts for 85-90% of total glass container sales through distributors. If Owens does not want them to resell, it could refuse to give the distributors enough containers to allow it. (Nelson, Tr. 2849.)

¹⁷ By "arbitrage" customers could theoretically purchase glass containers through other customers who receive lower prices. (Nelson, Tr. 2846.)

C. Small Producers

1. Integrated producers

294. Coors is vertically integrated, operating one glass plant in Colorado close to its beer plant, where it produces amber beer bottles. All of the bottles are produced for its own use. None are sold on the open market. (Larson, Tr. 2299.) The plant is operating at full capacity, and the company also purchases bottles. (Larson, Tr. 2302-03, 2305.)

295. Miller operates one plant located in New York that produces flint and amber beer bottles. (CX 1412B-D.) The company has no external sales of bottles, and has a policy against selling containers that it has purchased on the open market. (Langer, Tr. 1523; CX 1412A.)

296. Gallo operates one plant in California and uses all of its production. (CX 1405A.)

297. Hillsboro (Hiram-Walker) operates one single-furnace glass plant in Illinois which produces only amber glass and has no high speed production equipment. (CX 1407B-D.)

298. Tropicana, now owned by Seagram, operates a single three-furnace glass plant, called the Industrial Glass Division, located in Florida. (CX 1414A-F.) Tropicana has only double-gob machines (CX 1414C-E), and therefore is not properly machined to produce containers like wine cooler bottles at a competitive cost. Seagram does not intend to use the plant for this purpose. (Smith, Tr. 1960-61.)

2. Other small producers

299. Arkansas is a single plant firm located in Jonesboro, Arkansas (CX 1403A-D.) The company produces no glass containers for baby food or baby juice, wine coolers, distilled spirits, single serve soft drinks or beer. (Ramplly, Tr. 1002-04.) The company operates five "Lynch" glass-making machines that were originally made in the 1920's and 1930's, described as "the last of the dinosaurs in the United States," and one six-section single gob IS machine. (Ramplly, Tr. 1017.) Unlike most other glass companies, Arkansas

has no automated inspection equipment and instead employees visually inspect the containers before hand-packing them. (Ramply, Tr. 1024-25.) Two of the company's three furnaces are high cost and inefficient. (Ramply, Tr. 1026; Cavanagh, Tr. 5262.) Arkansas has a "corporate policy" against making containers for beer, liquor or wine coolers. It also does not produce soft drink bottles because containers that withstand pressure require additional testing and insurance. (Ramply, Tr. 1029.)

300. Latchford operates two plants in California (CX 1409A-H), and would not be able to compete effectively east of the Rockies. (Smith, Tr. 2051.) Latchford operates only double gob machines. (CX 1409C-E.) The relationship between Owens and Latchford is so close that one witness described Latchford as "the sales and marketing agent" for Owens-Illinois on the West Coast. (Wilson, Tr. 2240.)

301. Leone operates a single one-furnace plant located in New Jersey. (Leone, Tr. 2645-46; CX 1410A-D.) Because of its single plant location, most of Leone's sales are concentrated in the Northeast Corridor and would not be competitive outside of this region. (Leone, Tr. 2653-55.) The company has only 8 section double gob machines. (Leone, Tr. 2646; CX 1410C.) Less than 5% of the company's sales are to national accounts, and the company has difficulty selling to such accounts because of its single-plant location. (Leone, Tr. 2664-65.) Leone is operating close to full capacity. (Leone, Tr. 2673.) Expansion would require a new furnace, which the company believes would not be economically feasible. (Leone, Tr. 2675.)

302. Glenshaw operates a single plant in Pennsylvania. (Lusby, Tr. 2455; CX 1406A-F.) Glenshaw sells glass containers principally to customers located in Pennsylvania and contiguous states. (Lusby, Tr. 2459.) Glenshaw is operating at close to full capacity. (Lusby, Tr. 2461-62, 2487.)

303. Liberty is a single-plant supplier located in Oklahoma (CX 1411A-G) that produces only non-returnable soft drink bottles. (CX 1411D-F.) The company is operating at capacity. (Kalil, Tr. 2383.)

304. Carr-Lowrey manufactures small "specialty" glass containers for toiletry and cosmetic applications, which are "very difficult-to-make" and which differ from the glass containers manufactured by "general line glass container manufacturers." (Rowe, Tr. 2596.) Wheaton is the company's principal competitor in this segment.

(Rowe, Tr. 2599, 2601.) Carr-Lowrey does not consider Owens-Illinois or other "general line" producers as competitors. (Rowe, Tr. 2601-03.) Carr-Lowrey does not manufacture or sell any glass containers for packaging baby food, jams and jellies, spaghetti sauce, mayonnaise, pickles, wine, wine coolers, shelf-stable juices, or soft drinks. (Rowe, Tr. 2609-10.) The largest machine Carr-Lowrey operates is an 8-section, double-gob machine. (Rowe, Tr. 2611.)

VI. ENTRY

305. There has been no successful new entry into glass container production since before 1980. (Cavanagh, Tr. 5266.)

A. *Lead Time*

306. Owens' most recent plant, at Toano, Virginia, took four years to bring on stream. (CX 27Z14.) Brockway acknowledges that it would take 24 to 30 months for a firm to enter the manufacture and sale of glass containers. (CX 28Z.)

307. Even after it is built, a new glass container plant faces obstacles to effective entry. Customers are reluctant to accept a new supplier. (F 326, 327.) Often, long-term supply contracts with current suppliers makes it difficult for customers to purchase from a new supplier. (Bachey, Tr. 3472-73.) Qualification for new suppliers may take from three to eighteen months. (Jameson, Tr. 800; Rottman, Tr. 938; Jardis, Tr. 1333; Bourque, Tr. 2086; Wilson, Tr. 2220.)

B. *Sunk Costs*

308. Sunk costs are costs that are not recoverable in the event of failure of new entry. (Nelson, Tr. 2813-14.)

309. The replacement costs of O-I's glass container plants range from \$40 million to \$110 million. (CX 27Z17-Z18.) Owens acknowledges that the sunk costs associated with "high capital investment discourages entry." (CX 933J.)

C. Scale Economies

310. To succeed in the marketplace, glass container companies must enjoy substantial economies of scale. (CX 2448H.)

311. Minimum efficient scale for a glass plant is at least 1% of total U.S. glass container capacity. (Cavanagh, Tr. 5260; CX 28Z2; CX 1451B, E.)

312. American-National Can's Foster-Forbes division was unable to serve the glass container market on a national basis with only five plants; it purchased four additional glass plants from Kerr, the purpose of which was "to expand [Foster-Forbes] to have a national presence" in the industry. (Zoon, Tr. 31-32.)

313. Owens estimates "a break-even capacity utilization for an efficient plant operation in the range of 65-80%." (CX 27Z86.)

314. Owens believes that the industry needs to be "taking down at least a plant a year for a good while" in order to prevent prices from falling. (Lemieux, Tr. 5588; F 380.)

D. Environmental Regulations

315. Environmental regulatory approvals have become increasingly stringent in recent years for new plants (Nelson, Tr. 2818) while exempting or "grandfathering" existing glass plant furnaces. (Larson, Tr. 2330, 2334-35, 2676-77.)

316. As a result of these environmental regulations, an entrant would face higher costs than existing producers from either operating an electric furnace, which has higher operating costs than a gas furnace, or adding precipitators to natural gas furnaces. (Larson, Tr. 2333; Cavanagh, Tr. 5236.)

317. Electric furnaces require more frequent rebuilds which add to the higher per unit cost. (Larson, Tr. 2331, 2333.)

318. If a new entrant were to use a gas furnace with a precipitator, capital costs would increase and rate of return would decrease. Smokestack precipitators cost a million dollars per furnace. Operating costs would go up because precipitators need frequent maintenance. (Larson, Tr. 2333-34.)

E. *Customer Acceptance*

319. Owens has multi-year supply agreements with Gerber (2 years), Ragu (3 years), Campbell (3 years), Smuckers (3 years), Heinz (3 years), Seagram (2 years) and Nestle (3 years). (Bachey, Tr. 3472-73.)

320. Customers require new glass container suppliers to go through lengthy testing programs to ensure that there are no quality problems with the supplier's glass that would jeopardize the customer's brand name. (Mitchell, Tr. 661-62; Jameson, Tr. 799-800; Faulkner, Tr. 1272.)

321. A supplier's ability to make a glass container that can run on the customer's filling line without breaking is an important factor in selecting a glass supplier. (Rottman, Tr. 915; Jardis, Tr. 1331; Smith, Tr. 1942.)

322. Because glass containers are used in packaging food, beverages and other consumable products, customers choose suppliers with a proven quality record, which increases the difficulty faced by a new entrant. (Jones, Tr. 552; Blecharz, Tr. 4889; CX 227A.)

323. Suppliers generally amortize a customer's custom glass molds over 25,000 to 30,000 gross. (Bachey, Tr. 3663.) Customers are reluctant to switch to a new supplier when glass molds are not paid for. (Jardis, Tr. 1361; CX 1472.)

F. *Vertical Integration*

324. Glass container customers acknowledge that vertical integration is not feasible because of insufficient volume; inability to serve all plants from a single glass plant; and environmental problems of glass plants. (Mitchell, Tr. 679; Faulkner, Tr. 1276; Blecharz, Tr. 4969.)

G. *Foreign Entry*

325. It is unlikely that a new entrant could successfully build a new plant outside of the United States (as in Canada or Mexico) and ship in. (F 265-79.)

VII. EXPANSION

A. *Quality*

326. Quality is important to users of glass containers because of line speeds, breakage, glass contamination in the product, and brand image (Jameson, Tr. 798; Willers, Tr. 1748; Smith, Tr. 1942.)

327. Customers are reluctant to deal with new suppliers, particularly single-plant suppliers. (Rembert, Tr. 164, 167; Jones, Tr. 551-52; Smith, Tr. 1944-46.)

B. *Plant Location*

328. Customers prefer multi-plant suppliers with back-up supply in case of an accident. (Rembert, Tr. 166-67; Rottman, Tr. 917-18, 942; Jardis, Tr. 1339-41.)

329. Glass containers are difficult to ship long distances due to freight costs. (Rembert, Tr. 176; Larson, Tr. 2303-04; Rowe, Tr. 2627; Leone, Tr. 2665.) Multi-plant firms have an advantage over single-plant firms because glass containers are costly to ship. (Leone, Tr. 2653-54.)

330. Customers do not store large quantities of glass and need reliable deliveries to avoid running out of containers. (Jameson, Tr. 797-98; Langer, Tr. 1455-56; Willers, Tr. 1748-49; Smith, Tr. 1943-44.)

C. *Efficient Production*

331. Firms with small furnaces have higher costs than firms with efficient equipment. Because high-speed equipment, such as triple gob and quad machines, can produce more bottles faster than smaller single and double gob machines, it is most efficient to assign the largest volume possible to high-speed machines. (Zoon, Tr. 75; Leone, Tr. 2672-73; CX 29B.)

332. Ten-triples and ten-quads are the most efficient machines for all types of glassware and are the only machines Owens makes for its own use. (Lemieux, CX 1225 at 63.) Producers who have this

equipment have lower costs than small producers who have only singles and doubles. (CX 1006C; CX 1012Z1-Z2; CX 1017F.)

333. Latchford, Glenshaw, Leone, Arkansas, Tropicana and Hillsboro have no machines larger than double gob. (CX 1403, 1406, 1407, 1409, 1410, 1414.) Owens' output per machine is 35% better than the rest of the industry. (CX 19 at 19; CX 933I.)

334. Brockway acknowledges that modernization of production lines to increase capacity can take two years to accomplish. (CX 28Z36.)¹⁸

335. Hillsboro and Coors produce only amber glass for beer and distilled spirits containers. (CX 1407; CX 1419.) Color changes require a furnace to be down for about 3-5 days. (Lemieux, CX 1225 at 59; CX 923B.)¹⁹

336. Expanding production by electric boosting²⁰ is not cost efficient because of the high cost of electricity (Cavanagh, Tr. 5236; CX 502B) and the increased rate of brickwork erosion. (Larson, Tr. 2332.) Electric boosting requires higher productivity forming machinery, which would require capital costs at Owens' plants ranging between \$3 million and \$13 million. (CX 27Z24-Z28.)

337. Small glass container producers lack the engineering of the larger multi-plant firms because single firms cannot defray such expenses. (Rembert, Tr. 166-67; Rottman, Tr. 916-17; Willers, Tr. 1750; Leone, Tr. 2653, 2658.)

D. Capacity

338. Small firms operate at capacity, and are unable to produce additional glass. (Smith, Tr. 2005; Larson, Tr. 2304, 2327; Kalil, Tr. 2383; Lusby, Tr. 2461-62, 2487; Leone, Tr. 2673; Silvani, Tr. 3715; CX 1153A.)

¹⁸ If electric boosting has not been used, furnace rebuilds occur once every seven or eight years and take about 60 days. (Cavanagh, Tr. 5198-5200.)

¹⁹ Most beer is packaged in amber bottles to protect against ultraviolet light. (Larson, Tr. 2305.) Miller is the only large producer that uses flint glass for beer.

²⁰ Electric boosting is a means of using electrodes in the furnace to melt additional glass in order to obtain more capacity and to refine the glass. (Larson, Tr. 2327.)

339. Expansion is limited at many glass plants by lack of land. (Zoon, Tr. 87-88; Rowe, Tr. 2619, 2624.)

340. Environmental regulations make expansion less likely. (Larson, Tr. 2337; Leone, Tr. 2675-76.)

VIII. PRICE COMPETITION

A. *Pricing Behavior*

341. When larger glass container producers raise prices, smaller producers usually follow. (Jones, Tr. 557; Jardis, Tr. 1349; Harralson, Tr. 1644-45; Willers, Tr. 1834; Smith, Tr. 1953, 1964; Wilson, Tr. 2241-42, 2244.)

342. Small producers operate small plants and do not have the production capacity of leading producers. (CX 1451.) It is unlikely that small firms could constrain a price increase by the leading firms. (Rembert, Tr. 177; Jameson, Tr. 807; Jardis, Tr. 1345-46; Smith, Tr. 1953; CX 1451.)

B. *Excess Capacity*

1. Capacity utilization

343. Capacity utilization is affected by four factors: the size of the furnace; the size of machines and other possible "choke-points" in the manufacturing process; the product mix; and the number of days a plant operates. (F 344-349.)

344. Physical capacity is tonnage that can be melted daily by the furnace. The number of containers produced on each furnace depends on the types of machines on the furnace, and the size of bottles. (CX 28Z35.) Heavier bottles draw more glass from the furnace than light bottles. (Cavanagh, Tr. 5292-93.) The amount of glass pulled from a furnace depends on the products. (Ramply, Tr. 1027-28.)

345. The productive capacity of a furnace is limited by the type of machines, the condition of the furnace, and the product mix. (Zoon, Tr. 84.)

346. Some companies, including Brockway, use machine hours in determining capacity utilization. (Rowe, Tr. 2633; Cavanagh, Tr.

5286; CX 28Z35.) Owens and others measure capacity based on machine operating days. (Leone, Tr. 2674-75; Cavanagh, Tr. 5289; CX 520A-C.) Some companies use machine operating rates. (Cavanagh, Tr. 5290.) Coors uses a method based on batch usage and fusion loss. (Larson, Tr. 2317; Cavanagh, Tr. 5290-91.)

347. A furnace or machine cannot be used for actual production 24 hours a day, 365 days a year. Some days are holidays by union contract. Furnaces and machines require rebuilds. (Lemieux, CX 26 at 82-83.) Color changes require several days of downtime in each direction. (Lemieux, CX 26 at 82-83.) Owens uses 335 days per year in calculating practical operating capacity, (Lemieux, Tr. 5608-09.) Brockway uses 340 days in calculating capacity utilization. (CX 920S.)

348. Demand for glass containers increases during summer months because of the stronger demand for beer, soft drinks, and juices, and seasonal fruits and vegetables at this time of the year. (Lemieux, Tr. 5560.) Owens runs at full capacity "almost every summer." (Lemieux, Tr. 5560.) Rebuilds and maintenance are scheduled during the first and fourth quarters to coincide with holiday shutdowns and decreased demand. (CX 2447D.) Because glass companies run full out during the summer and have downtime during the winter, the industry has operated with some excess capacity. (Lemieux, Tr. 5624-26.) Owens tries to operate at 83% capacity. (Lemieux, Tr. 5624.)

349. The most probative evidence on capacity utilization comes from non-interested glass container producers, regarding their productive capabilities, customers regarding their abilities to obtain glass containers, the actions of glass producers seeking or turning down business, and documentary evidence regarding Owens' and Brockway's perceptions of capacity utilization. That evidence shows that capacity utilization has been high in recent years as the result of plant shutdowns, that there have been shortages of glass bottles, that the industry has controlled capacity utilization to prevent prices from falling, and that capacity utilization is not expected to fall. (F 350-378.)

2. Utilization history

350. Beginning in the late 1970's and early 1980's, demand for glass containers declined due to the loss of the family-size (2-liter) soft drink business to PET, and a shift of the beer industry from glass to metal cans. (CX 49R; CX 50Z10; CX 1009M; CX 1013N; CX 1026I; CX 1038L; CX 1039C, G.) In response, the glass industry began in 1980 to shut down plants and furnaces. (CX 27Z73-Z75; CX 79G; CX 816T.) The industry closed 30 plants, took 100 glass furnaces out of operation, and eliminated 350 glass-forming machines. (CX 20; CX 27Z73-Z75; CX 79G; CX 816T.)

351. By December 1984, capacity utilization had improved to the point where Owens was expecting to operate at 93% utilization for 1985. (Lemieux, CX 1038A, L.)

352. William Laimbeer, Owens' former Executive Vice President (CX 19 at 2) observed in May 1985: "Our glass container plants are running extremely well. These operations have been positioned to break even while operating at 60 percent of capacity." By May 1985, the industry was at 90% capacity utilization. (CX 816S.)

353. By early spring of 1985, bottlers were complaining to Owens about the lack of glass containers. (CX 524; CX 525A-B.) Owens was sold out. (Ayres, Tr. 1865.) In response to a complaint by one bottler, Owens claimed that it had "brought on all of the capacity we can." (CX 526A.)

354. Brockway's 1986-88 Strategic Plan projects that Brockway would operate at 90% each year through 1990 (CX 902S), because of consolidation among glass producers. (CX 902Z48.)

355. In September 1985, according to Mr. Lemieux, the glass industry was "operating at high capacity utilization," Owens' competitors were trying to raise prices, and "OI [was] making record returns." (CX 1012G.)

356. For the year 1985, Owens operated at 92.1% of practical capacity (CX 936Z26) and estimated that capacity utilization in the glass container industry was 99.9%. (CX 19 at 19; CX 833B.)

357. During early 1986, Owens turned down customers because of its tight capacity situation. (CX 361B; CX 1483.)

358. In May 1986, the capacity situation resulted in Owens being "oversold" and "making a lot of money." (CX 19 at 48.)

359. In October 1986, Les Garton, the Vice President and General Manager of the Glass Container Division, reported that during 1986 Owens "operated at full capacity" (CX 50Z8), and achieved "record earnings" (CX 50Z8), and that "The industry operated at its highest capacity level in recent memory this year -- at about 92 percent of practical capacity. . . . We operated our 14 plants at nearly 100 percent practical capacity. . . ." (CX 50Z11-Z12.)

360. The fact that Owens operated at full practical capacity utilization during 1986, at 92%, was confirmed by Mr. Lemieux. (Lemieux, CX 26Z57-Z58.)

361. This capacity utilization level resulted in Owens achieving "record net earnings for the second consecutive year" in 1986. (CX 18Q.) Operating profit of Owens' domestic Glass Container Division increased by 20% in 1986, following an increase in 1985 of 140% over 1984. (CX 18J.)

362. Owens estimated that the entire glass industry operated at a 92% utilization rate during 1986. (CX 40F.) This full capacity utilization continued into 1988. (CX 20N-O.)

363. In April 1987, Brockway advised Borden that it was "in the awkward but very comfortable position of being sold out" on the lines where it would run glass for Borden's bouillon containers, and declined to submit a bid. (CX 1484.) Brockway's capacity utilization was running at approximately 90% in October 1987. (Coakley, CX 23Z28.)

364. In early 1988, Owens was still turning down new business. (CX 1482; CX 2432H.)

365. During 1988, contrary to the tradition in the industry, all of Owens' plants and some of the Brockway plants ran straight through Easter, Memorial Day, the Fourth of July and Labor Day. (Lemieux, Tr. 5561; McMackin, Tr. 5803.)

366. A June 26, 1987 Owens' memorandum estimated that industry capacity utilization will remain in the low 90's from 1991 through 1995. (CX 123M.)

3. Customers

367. Buyers of glass containers confirm that glass capacity utilization has been high and that they have had difficulty obtaining

glass containers. (Mitchell, Tr. 678; Jameson, Tr. 805; Rottman, Tr. 944; Jardis, Tr. 1346; Langer, Tr. 1466.)

4. Other producers

368. Anchor has recently operated at production levels high enough that it has been able to increase prices. (CX 2447B.) Anchor recently refused to bid on soft drink business in the western U.S. (Kalil, Tr. 2386-88), informed one customer that it is "running most of [its] machines at close to capacity" (Jones, Tr. 598), and has shown disinterest in other business. (Willers, Tr. 1757-58.) Prior to the Diamond-Bathurst acquisition, Anchor was operating its plants at near practical capacity. (CX 2448E, F.) After acquiring Diamond-Bathurst, Anchor shut down plants during June and July of 1988. (CX 1401B, C, D, E, F, G.)

369. Ball-Incon reported in May 1988 that it was running at 95% of capacity. (CX 408G.) Customers confirm that Ball's capacity is "sold out." (Jones, Tr. 598; Jameson, Tr. 805.)

370. Coors is operating at full capacity. (Larson, Tr. 2304, 2327.)

371. Foster-Forbes has sales for everything the company can produce. (Zoon, Tr. 62; Jameson, Tr. 805.)

372. Gallo sometimes looks outside of its own self-manufacture for supply (Smith, Tr. 2005; Silvani, Tr. 3715), indicating that the company is not able to meet all of its needs for glass containers.

373. Glenshaw is operating at "very close to full capacity." (Lusby, Tr. 2461-62, 2487.) Glenshaw expects to operate near full capacity throughout 1989. (Lusby, Tr. 2496.) Borden understands that Glenshaw is "pretty much maxed out" on what it can produce for ReaLemon bottles. (Willers, Tr. 1732, 1760.)

374. Hiram-Walker, which owns Hillsboro, has been buying glass containers from Owens (CX 1153B), indicating that Hillsboro is not able to produce all of Hiram-Walker's needs.

375. Customers confirm that Kerr is "sold out." (Jones, Tr. 598; Jameson, Tr. 805.)

376. Leone is operating close to full capacity utilization, and operated at 95% of capacity in 1988. (Leone, Tr. 2673.)

377. Liberty told at least one customer that its capacity situation is "full," and "there are periods during each year when they [Liberty] refuse orders or turn down orders or say they don't want any orders." (Kalil, Tr. 2383.)

378. Miller has been buying beer bottles from both Owens and Brockway (CX 1153A), indicating that the company is not able to produce all of its needs.

5. Effects of high utilization

379. Glass container manufacturers recognize that excess capacity tends to decrease prices, and that full capacity utilization raises prices. Price wars occurred in the early 1980's because of excess capacity in the industry. Manufacturers will keep full utilization in the future, not by price competition, but by further plant closings to keep prices up. (Lemieux, CX 47G and 1026H; CX 372B; CX 829D-E; CX 922E; CX 929F.)

380. Owens will close plants over the next few years to avoid the "price wars" of the early 1980's. (CX 843A-Z12.) Mr. Owens, Director of Planning, testified that this was Owens' "share" of industry-wide reduction needed to keep utilization flat to avoid the "price wars." (Whiting, CX 1221 at 188-89.) Owens is deciding which two plants it intends to take down next year. (Lemieux, Tr. 5588, 5623-24.)

C. Likelihood of Price Cuts

381. Glass container customers are reluctant to switch suppliers. Mold production costs inhibit moving from one company to another because molds are not interchangeable due to machine variations. (Jardis, Tr. 1341; Lemieux, CX 1225 at 49.) Molds are owned by the customer. A customer shifting suppliers would have to invest in new molds. (Jardis, Tr. 1337, 1360-61.)

382. Other than Miller, almost all beer is in amber glass rather than flint. (Larson, Tr. 2305.) Except for wine and wine coolers (which are flint or green) and distilled spirits (which are amber), most of the end-uses are in flint glass. Changing colors requires several days of down-time. (Nelson, Tr. 2914.)

383. Among the major producers who would be part of any collusion in this industry -- Owens, Anchor, Ball, Foster-Forbes and Kerr -- there is little excess capacity. (F 368-378.)

384. Anchor is losing money, and has unsuccessfully attempted to raise prices during the past year. (Mitchell, Tr. 670-72; CX 450D, H.) Customers desire a supplier that is financially sound. (CX 722E.) Owens believes that Anchor's incentive is to "look to supporting an orderly market" rather than taking the risks of price-cutting. (CX 818A.)

385. Owens is not likely to cut prices because it has the most to gain as a result of its market share. Owens realizes the danger of price wars in this industry and has a debt of \$3.9 billion. (CX 539B; CX 1037Z8.)

386. Foster-Forbes would not cut prices if there were a collusive arrangement; Foster-Forbes would raise its prices of glass containers if Owens and the other major producers raised theirs. (Zoon, Tr. 76-77.) Foster-Forbes has more than 50% of its production in either amber or green glass (CX 1451S), so that it would be costly to change to flint. (F 335.)

387. Ball and Kerr both recently attempted to raise prices. (Mitchell, Tr. 670-72; Lemieux, Tr. 5612-13.)

388. Glass producers follow price increases in response to Owens' price increase announcement. (Bachey, Tr. 3628-29.) Anchor already has indicated that it intends to raise prices, and Owens received reports from the field that Kerr was also planning to increase prices. (Lemieux, Tr. 5613.)

389. Users of glass containers feel that prices are likely to increase as a result of this merger. (Rembert, Tr. 195; Mitchell, Tr. 690; Jameson, Tr. 811; Clements, CX 1460A; Langer, Tr. 1468-69; Willers, Tr. 1765; Ayres, Tr. 1868; Kalil, Tr. 2398; Blecharz, Tr. 4974; CX 60A.)

D. Detection of Price Cutting

390. Glass container manufacturers frequently visit plants of customers and can determine the identity of glass suppliers. (Silvani, Tr. 3703; Lankester, Tr. 4061; CX 23Z98.)

391. Each glass bottle shows the identity of the company and plant which produced it, and when it was produced. (Silvani, Tr. 3703; Lankester, Tr. 4059 and CX 2026C; CX 454A-F.)

392. Prices are known in the industry because customers tell their suppliers. (Bachey, Tr. 3627.) Customers informed Owens that Anchor intends to raise prices in reaction to Owens' most recent price increase announcement. (McMackin, Tr. 5824; CX 610; CX 754A-C and Towse, CX 1220 at 139-141.)

393. Respondents track competitors' capacity, production and shipments, and how the business is split at customers. (CX 40A-F; CX 62A-V; CX 118A-K; CX 121A-K; 1127A-C and CX 1130A-H; CX 1151A-Z82.)

394. Brockway obtains information about its competitors from employees who were formerly employed by competitors (CX 79Z14, Z34, Z66), from plant tours (CX 79Z72, Z78) and from employees of trade associations, such as the Glass Technical Institute. (CX 79Z62.) Foster-Forbes knows who is supplying glass containers to its major customers and how much they are supplying. (Zoon, Tr. 63.)

395. Owens and other glass container manufacturers get clauses in supply agreements that give them the right to meet a price decrease if a competitor should offer a lower price. (Zoon, Tr. 60; CX 302M; CX 765; CX 1481C; Bachey, CX 1222 at 53, 57.)

396. Distributors report to their suppliers about competitive bids in the marketplace, including price quotes and the competitors that quoted those prices. (Silvani, Tr. 3713, 3771.)

E. *Owens' Power to Retaliate*

397. Owens is the lowest-cost domestic producer of glass containers. (Lemieux, CX 26Z61.) Owens' equipment is 40% more productive than the most advanced equipment available to its competition and Owens is the only producer close to having a fully-automated production facility. (CX 101I; CX 101Z10.)

398. Owens is the only producer with quadruple gob forming machines, which are more productive than 10-triples, the next best machine (500 bottles per minute for 10-quad versus 350 bottles per minute for 10-triple). (CX 101Z18.) Owens' first 10-quad was in-

stalled in 1982. (CX 1012M.) The company now has seven of these machines installed in various plants, together with 20 10-triples and 19 8-triples, the next most productive machines. (CX 1416A-Z37.)

399. Since 1980, Owens' productivity has increased at a greater rate than the rest of the industry. (CX 829B-E; CX 1013Q; CX 1037Q.)

400. Brockway was, with 10 triple-gob machines of its own (CX 1417A-Z8), also a low cost producer compared to other companies in the market. (CX 50Z12.)

401. During recent years, Owens has reduced the costs. From 1979 through 1986, productivity improvements averaged 10% a year, the number of plants was reduced from 22 to 14 and the number of employees was reduced from 19,000 to 10,000. (CX 19 at 19; CX 101E.)

402. During 1986, the OI Glass Container Division's unit production costs were down 13% from five years previously, a period during which inflation increased 13.5%. (CX 50Z24.) In 1986, Owens' gross output by machine line was 152% greater than its 1975 output (CX 50Z22); raw material costs were down \$21.5 million in 1986 from 1982, (CX 50Z23); natural gas costs were down \$22 million in 1986 from 1982, and costs per cubic foot were expected to be down 17.1% in 1986 from 1985 (CX 50Z23); and salaried head-count in 1986 was down 43% below four years previously. (CX 50Z23.)

403. As a result of these productivity increases, lower costs and flat prices, Owens has been able to increase its profit margins. (CX 1034Z27.)

404. Owens is installing equipment that allows the production of narrow-neck containers at about 15% greater speed and about 15% lighter weight than previous containers, which reduces costs about 4-5%. (Lemieux, Tr. 5602, 5563.)

405. Prior to the acquisition by Owens, Brockway planned on installing 20 narrow-neck press and blow machines in its plants during the time period 1988-1991. (CX 1139D.) Brockway expected to get a productivity improvement of about 4-5% per year as a result of installing this technology. (McMackin, CX 1202 at 50.) For the five previous years, Brockway had been achieving average annual

productivity increases of about 3% based on improvements to existing machinery. (McMackin, CX 1202 at 49-50.)

406. Owens tries to get customers to switch containers to those made by high productivity equipment, but does not pass all its savings to the customer. (CX 50R and CX 1012Z129.)

407. Between 1982 and 1986, the cost to Owens of producing and distributing a gross of 16-oz. single-serve soft drink bottles decreased from \$13.03 to \$11.05, while Owens' price per gross decreased only slightly, from \$13.39 to \$13.24. (CX 381.)

408. Owens' costs declined during recent years, while the company's profit margins increased. Owens' glass cost in 1982 was \$53.03 per ton compared to \$45.86 per ton in 1987, and its cost of natural gas in 1983 was \$4.82 per MCF versus \$2.75 per MCF in 1987. (CX 511B.) Owens' gross profit margins increased from 14% in 1982 to 19.5% in 1987, and were projected to remain at about that level during 1988. (CX 1037Z2.)

409. Mr. Bachey, Owens' Vice President, told Anchor that Owens would "get even" with Anchor for undercutting Owens at one of Owens' bottling accounts, and over the next three and one half months took five accounts away from Anchor by lower prices. (CX 2440A-B.)

IX. REMEDY

410. Divestiture is appropriate in this case. Brockway's glass plants can be spun off, together with an organization necessary to run those plants. (Lanigan, CX 1219 at 418; McMackin, Tr. 5859-60.)

LEGAL DISCUSSION

I. INTRODUCTION

Glass containers for cosmetics, perfumes and ointments were used in Egypt in 2000 B.C. Until a hundred years ago, glass bottles and jars were still made individually, with a glass blower and four assistants turning out about 216 a day. (CX 51B.) Michael Owens developed the first practical bottle making machine in 1903, and since then the technology has continuously improved.

The glass container industry grew steadily until the 1980's when overproduction and price cutting, and increasing competition from other packaging material, caused several companies to go out of business. After a series of mergers and plant closings, the glass industry by 1986 was again dynamic and growing. (CX 51I.) The acquisition involved in this proceeding then took place.

II. THE RELEVANT PRODUCT MARKET

Section 7 requires a determination of (1) a relevant "line of commerce," or product market, and (2) a "section of the country," or geographic market in which to assess the potential effects of the acquisition. *Brown Shoe Co. v. United States*, 370 U.S. 294, 324 (1962).

There is little doubt that the relevant geographic market is the continental United States. (F 265-279.)

The contested issue in this case is whether the relevant product market includes all rigid containers, or is limited to glass containers. Complaint counsel allege that the manufacture and sale of glass containers is a relevant product market with submarkets in which customers could be harmed, and that, because specified users have no close substitute for glass they would not switch to other packages in the event of an increase in price of glass. The alleged submarkets were:

Baby food and baby juice	Distilled spirits
Spaghetti sauce	Wine
Mayonnaise	Wine coolers
Pickles	Single-serve soft drinks
Jams and jellies	Certain scientific and
Shelf-stable juice	chemical applications

The outer boundaries of a product market are determined by reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it. Within the broad market, well-defined submarkets may exist which constitute product markets for antitrust purposes, and the boundaries of such submarkets may be determined by looking at (*Brown Shoe*, 370 U.S. at 325):

industry or public recognition of the submarket as a separate economic entity, the product's peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors.

Not all of these criteria must be met before a relevant submarket is found. Indeed, in *Brown Shoe* itself, the Court upheld the submarkets of men's, women's and children's shoes based only on public recognition, separate production plants, peculiar product characteristics and distinct customers. 370 U.S. at 326. And in *United States v. Aluminum Co. of America*, 377 U.S. 271 (1964), the Court observed that aluminum and copper electrical conductors perform the same job equally well. 377 U.S. at 276. Nevertheless, the Court found the two in separate submarkets, relying on only two factors: distinctive characteristics and prices. *Id.* at 276-77.²¹

The record in this case clearly establishes numerous "area[s] of effective competition." *United States v. Continental Can Co.*, 378 U.S. 441, 456 (1964), in which to test the competitive effects of this acquisition.

A. Characteristics

1. Glass

Glass containers have distinctive characteristics:

- Glass is clear, permitting the contents to be visible. This is an advantage for food and beverages. (F 40.)
- Glass is impermeable, keeping oxygen out and carbonation in, and maintains a vacuum to prevent spoilage. (F 42.)
- Glass is retortable, permitting food to be sterilized. (F 44.)
- Glass is hot-fillable. (F 44.)
- Glass is inert, and does not affect the taste of the contents. (F 47.)
- Glass conveys a quality image. (F 50.)
- Glass is easily reclosable. (F 45.)
- Glass is microwaveable. (F 51.)

²¹ See also *Abex Corp. v. FTC*, 420 F.2d 928, 931-932 (6th Cir.), cert. denied, 400 U.S. 865 (1970); see other cases cited in *Reichhold Chemicals, Inc.*, 91 FTC 246, 284-285 (1978), *aff'd*, 13 FTC Court Decisions 158 (4th Cir. 1979).

- Glass is rigid, facilitating filling, proper sealing, and stacking. (F 48.)
- Glass is recyclable. (F 96.)

Glass, however, is heavy, and shatters, and may be less desirable for containers handled by children.

2. Cans

Cans also are impermeable, retortable, rigid, and recyclable, but they have disadvantages:

- Cans are not clear. (F 41.)
- Cans are not readily reclosable. (F 46.)
- Cans lack a quality image. (F 218 (distilled spirits); F 211, (wine coolers); F 200 (wine).)
- Cans may impart a taste to the contents of the container. (F 47.)

3. Plastic

Plastic is light and strong. It is used for large containers, such as 2-liter soft drinks, and bleach, where the weight and brittleness of glass are a disadvantage. (F 56.) Plastic containers for products like peanut butter and ice cream topping are convenient for use by children. (F 77.) Plastic containers are squeezeable, which is good for a ketchup container. (F 76.) Plastic has disadvantages:

- There are no clear impermeable plastic containers. (F 69.) Multi-layer high barrier plastics are more expensive than glass and lack its clarity. (F 33.)
- There are no clear wide-mouth plastic containers that can be retorted or hot-filled. (F 68, 69, 71, 74.)
- Plastic lacks a quality image. (F 202 (wine); F 212 (wine coolers); F 222 (distilled spirits).)
- Plastic lacks rigidity, so it has slow filling speeds, and inferior stacking strength. (F 49.)
- Plastic has recycling problems. Recycled plastic cannot be used for food or beverages. Some forms of plastic packaging are banned in the State of Washington. (F 96-104.)
- Plastic containers are generally more costly than glass, from 25-30% for mayonnaise to double the cost of glass for baby juice. (F 52.)

Many users are committed to glass and would not switch away from glass if prices were to increase as a result of this merger.²² Glass has clarity, impermeability, retortability, resealability, inertness, rigidity, quality image, microwaveability, and recyclability, that are not found in the same combination in plastic or metal. Glass is the most cost effective container for many uses. (F 39, 52.)

B. Uses

If the presence of substitute materials were the only test to determine a relevant submarket, single-serve soft drinks would be inappropriate as a measure of the effect of the merger.²³ Demand is "elastic," and 75% of the product is packaged in plastic and cans. (F 226-255.) Even without considering that submarket, however, the record contains substantial evidence of preference for glass con-

²² Many customers who use glass containers for packaging have no acceptable substitute for glass or would not switch from glass to some other type of container if glass prices were increased: Baby food and baby juice: Gerber (Rottman, Tr. 922-23, 934); Beech-Nut (Jones, Tr. 521-22, 529); Spaghetti sauce: Ragu (Jameson, Tr. 795, 797); Borden (Prince and Classico) (Jardis, Tr. 1325, 1330); Jams and jellies: Welch's (Rembert, Tr. 142, 144); Borden (Bama) (Willers, Tr. 1706); Clements Foods (Clements, Tr. 752, 756); Pickles: Cates (Faulkner, Tr. 1267, 1271); Shelf-stable juice: Ocean Spray (Bourque, Tr. 2079-81, 2084); Welch (Rembert, Tr. 155, 159-60, 161); Borden (RealLemon) (Willers, Tr. 1725); L&A Juice (Langer, Tr. 1443, 1449); Clements Foods (Clements, Tr. 762); Mayonnaise: CPC (Hellman's and Best Foods) (Mitchell, Tr. 668-70); Borden (Bama) (Willers, Tr. 1697- 98); Clements Foods (Clements, Tr. 758-59); Wine: Wine World (Wilson, Tr. 2215-16, 2218, 2220, 2274); Seagram (Smith, Tr. 1940).

Some soft drink bottlers testified that they would not switch to plastic or cans in the event of a 5-10% increase in the price of glass. RC Cola (Harralson, Tr. 1564, 1582, 1645-46); L&A Juice Co. (Langer, Tr. 1442-43, 1448); Pepsi-Cola Bottling Co. of Denver (Ayres, Tr. 1854, 1856); Kalil Bottling Co. (Royal Crown, Dr Pepper, Canada Dry, 7-Up) (Kalil, Tr. 2353, 2358). This may be because the cost of the container is relatively low and a 10% increase would amount to only one cent a bottle. (Harralson, Tr. 1564.) Or it may be because cans already dominate the market. (Ayres, Tr. 1854.) Other evidence shows that other soft drink producers would promote cans or plastic in the event of a price increase in glass. (*Ibid.*, F 234.)

²³ While single-serve soft drinks may well be a relevant submarket based on criteria other than use, *supra*. n. 21, that issue was not joined and is unnecessary to this decision.

ainers in several end-uses²⁴ where cans or plastic are regarded as inferior.²⁵

Producers of glass containers can raise prices to some buyers who have no practical substitute for packaging their products. Glass containers are used to package almost all of the submarkets for baby food, spaghetti sauce, jams and jellies, pickles, mayonnaise, and wine coolers. Sales of glass jars and bottles for these products in 1986 totaled over \$500 million. (F 105, 134, 146, 157 and 185.) Plastic and metal are not usually used for consumer packages for these products because they lack the technical qualities of glass (F 110, 140, 148, 161), or for perhaps more tenuous reasons such as the perceived quality image of the product packaged in glass, or the desire of the consumer for a clear package in order to see the contents.²⁶ Even in submarkets where other packaging materials are used more extensively, glass dominates certain sizes and quality: shelf-stable juice (F 165-184), distilled spirits (F 222), and premium wine. (F 199.) Sales of glass bottles in these submarkets total hundreds of millions of dollars annually. (CX 90B, F 165.) In all of

²⁴ Although complaint counsel alleged that glass containers used in scientific, chemical and laboratory applications was a relevant market the proof was minimal (Proposed Findings, Vol. II, p. 168), and the allegation must be denied for failure of proof. They also argued that glass containers for instant coffee was a relevant market. Their proffer was excluded from evidence. (Tr. 308 at 5-94.)

²⁵ Although other packaging materials exist, these packages are not viewed as substitutes by customers. Squeezeable plastic containers for mayonnaise, jelly and relish are being used by a few producers, but are not acceptable substitutes for glass because of their high cost, lack of clarity, low filling speeds, inferior shelf-life, poor consumer acceptance, and similar considerations. (F 152-156, 164, 192-197.) Gerber has tried a translucent, multi-layer, heat-resistant plastic container for baby juice and met similar problems (plus permeability problems that restricted its use to only a few types of juice), so that the company decided not to expand its limited marketing area for that product. (F 127-132.) Two customers in the juice segment use plastic containers for some applications in the 64-ounce size, but these containers have permeability and heat-resistance problems, as well as high cost relative to glass. (F 173-180.)

²⁶ Much of respondents' defense relies heavily on numerous exhibits of packages using materials other than glass. Many of these products were from foreign, or irrelevant markets. Their materiality was left largely unexplained in the record. The colorful "grocery shelf" exhibits are misleading and have been given little weight.

these submarkets, the demand for glass containers is "inelastic," and purchasers would accept substantial price increases without switching to a substitute material. There is little doubt that the public interest is served by regulating market practices involving this amount of commerce. *Topp's Chewing Gum, Inc.*, 67 FTC 744, 836 (1965).

C. Price

Prices for glass containers and other containers differ: glass prices do not move with prices of other containers. Plastic prices change more than glass and sometimes move in a different direction than glass. (F 52, 83.) During 1988, glass prices remained flat (F 83), while PET bottle prices increased by 20%. (F 88.) The cost for plastic typically is higher as container sizes become smaller, so that relative price differences vary depending on size. (F 55.) The price premium for plastic is from 20% (F 245) to three times the price of glass. (F 52, 120.) Plastic bottles, metal cans and glass containers have different raw material costs. (F 84-89.)

These price differences between glass and other containers show glass containers to be a relevant product market. If prices of various products differ over time, those products comprise separate lines of commerce. *Brown Shoe*, 370 U.S. at 325; *B.F. Goodrich Co.*, 110 FTC 207, 290 (1988); *Grand Union Co.*, 102 FTC 812, 1041 (1983).

"[S]ensitivity to price changes" is relevant to product market definition. *Brown Shoe*, 370 U.S. at 325. Producers of glass containers for most uses do not take into account the prices of other types of containers when making their bids. (F 82.) Users of these containers do not shift between glass and other types of containers based on prices (F 59), and would not shift to other forms of packaging if glass prices were to increase by 20%. The price of a glass container is less than 10% of the retail price. A 10% increase on the price of the container would result in a far lesser increase on the retail shelf price of the product. (F 58.) This tends to make buyers of glass containers less sensitive to changes in price.

D. *Industry Recognition*

"[I]ndustry or public recognition" of a product as distinct is evidence that a product constitutes a line of commerce. *Brown Shoe*, 370 U.S. at 325.

Buyers and sellers of containers recognize glass containers to be a distinct line of commerce. Owens computes its own market shares based on a glass only market, without including other rigid packaging. (F 94.) The glass and plastic container divisions at Owens employ separate sales forces, have separate research and development departments, constitute separate profit centers, and market their products separately. (F 92.) There is a trade association for producers of glass containers that does not include other types of packaging material. (F 95.) Glass producers employ different distribution practices from producers of other types of containers. Plastic and metal containers are sold FOB plant of manufacture, while glass containers are sold delivered. (F 90.) Producers of one type of container do not take into account the prices of other types of containers when making bids. (F 82.)

Customers maintain separate buyers or buying departments for different types of containers (F 93), and solicit bids only from producers of one type of container for specific packaging requirements. (F 81.) The price of glass (not plastic or metal cans) is likely to rise as a result of the merger. (F 389.) Customers would not buy plastic and metal if such an increase were to occur.

E. *Production Facilities*

The existence of "unique production facilities" is evidence that a product constitutes a line of commerce. *Brown Shoe Co.*, 370 U.S. at 325.

Glass containers are manufactured in unique production facilities. Glass container plants cannot economically produce other types of containers, nor can plants that manufacture cans or plastic containers produce glass containers. (F 257.)

Cross-elasticity of supply is a relevant factor in defining a product market for antitrust purposes. *Brown Shoe Co. v. United States*, 370 U.S. at 325 n. 42; *Weyerhaeuser Co.*, 106 FTC 172, 274 (1985).

Depending on the cost and speed of the shift, production substitution may allow firms that do not currently produce the relevant product to respond to an increase in the price of that product, and thereby defeat the price increase. *B.F. Goodrich Co.*, 110 FTC at 290. If a product has "unique production facilities," however, producers of other products cannot competitively respond to a price increase, which indicates a line of commerce. *Brown Shoe Co. v. United States*, 370 U.S. at 325.

Glass container plants produce only glass containers, and do not produce other types of products. (F 257.) Plants used for producing metal or plastic containers cannot be used to produce glass containers.²⁷

There is some production substitutability within the glass container industry. Glass lines are capable of switching from one type of glass container to another. Producers can switch from making one type of glass container to another (such as from mayonnaise to beer bottles). (F 263.) Even if a glass container manufacturer does not make a glass container, that firm is in the relevant market. (F 256.)

F. Case Law on Product Market

United States v. Continental Can Co., 378 U.S. 441 (1964), held that the product market is determined by (1) the products produced by the merging firms and (2) the end-uses for which they compete. Continental Can involved a merger between a metal can producer and a glass container producer, and resulted in a finding that "the interindustry competition between glass and interindustry end-uses metal containers is sufficient to warrant treating as a relevant product market the combined glass and metal container industries and all

²⁷ Glass is produced by heating sand, limestone, soda ash, and colorizers, in a high energy furnace. The raw materials used to produce other types of containers differ from glass. The principal raw material for metal cans is aluminum or steel. Plastic resins are petroleum-based so that their costs are influenced by world oil prices. During the past year, glass container prices have been flat. PET prices have increased from 51 cents/pound last year to about 68 cents/pound at present. PET bottle prices have increased while glass prices have been stable. (F 83-86, 88.)

end-uses for which they compete." *Id.*, 378 U.S. at 457.²⁸ The evidence in the present case shows that there are end-uses for which metal cans and glass containers do not compete. (F 105-255.) In finding a combined metal/glass container market, the Court did not hold that glass containers separately or metal cans separately could not be relevant markets. The Court specifically held that there may be other narrower lines of commerce involving the same products, 378 U.S. at 456-58:

Glass and metal containers were recognized [by the district court] to be two separate lines of commerce. But given the area of effective competition between these lines, there is necessarily implied one or more other lines of commerce embracing both industries.

* * * *

Nor are we concerned by the suggestion that if the product market is to be defined in these terms it must include plastic, paper, foil and any other materials competing for the same business. That there may be a broader product market made up of metal, glass and other competing containers does not necessarily negative the existence of submarkets of cans, glass, plastic or cans and glass together, for "within this broad market, well-defined submarkets may exist which, in themselves, constitute product markets for antitrust purposes." [Citing *Brown Shoe Co. v. United States*, 370 U.S. at 325.]

See also General Foods Corp., 69 FTC 380, 411 (1966), *aff'd*, 386 F.2d 936 (3d Cir. 1967), *cert. denied*, 391 U.S. 919 (1968):

The Court [in *Continental Can*] held that metal and glass containers were in the same product market for the purposes of considering the effects of the acquisition, even though the Court considered the products of the two companies to be in "separate

²⁸ The complaint alleged that the acquisition of the Hazel-Atlas Glass Company (which later became part of Brockway) by Continental Can Company violated Section 7 of the Clayton Act by lessening competition in ten separate product markets, including the "metal can" market, the "glass container" market, the "packaging" market, and seven other markets defined principally by end-uses within the overall industry. The district court found that three constituted relevant markets for purposes of Section 7: (1) the metal can market (*Id.*, 217 F. Supp. at 788); (2) the glass container market (*Id.*, 217 F. Supp. at 791); and (3) the beer container market (*Id.*, 217 F. Supp. at 794-95). Since the merger was between a can producer and a glass producer, the district court dismissed. The Supreme Court reversed the judgment of the district court, holding that "the inter-industry competition between glass and metal containers is sufficient to warrant treating as a relevant product market the combined glass and metal container industries and all end-uses for which they compete." *Id.*, 378 U.S. at 457.

industries" and to comprise distinct "product markets." The market defined by the Court in *Continental Can* was that delimited by the "outer boundaries" referred to in the *Brown Shoe* opinion; but the Court took pains to point out that its findings with respect to this broader market did not preclude the finding of narrower submarkets within the more comprehensive market.

See Liggett & Myers, Inc., 87 FTC 1074, 1155 n. 13 (1976) (*Continental Can* recognized glass as separate line of commerce), *aff'd*, 567 F.2d 1273 (4th Cir. 1977); *Borden, Inc.*, 92 FTC 669, 766 (Initial Decision), *aff'd* 92 FTC at 784 (1978). And *See* Posner and Easterbrook, Antitrust Cases, Economic Notes and Other Materials 366-67 (2d ed. 1981) ("[I]f the merger [in *Continental Can*] had been between two manufacturers of cans (or of bottles), the Court would surely have held that cans (or bottles) were an appropriate 'submarket' in which to appraise the effects of the merger.")

Even if there does exist an "all rigid container" market, as respondents have argued in this case, that would not foreclose a separate glass container market. Within any broad market, "well-defined submarkets may exist which, in themselves, constitute product markets for antitrust purposes." *Brown Shoe Co. v. United States*, 370 U.S. at 325.

"Lines of commerce" may be based on users' preferences, needs, or perceptions of quality, whether or not substitutes exist. For example, both glass bottles and plastic containers hold liquids, but they are not in the same relevant market for premium wines. (F 198-209.) *Times Picayune Pub. Co. v. United States*, 345 U.S. 594, 612 n. 31 (1953):

[f]or every product, substitutes exist. But a relevant market cannot meaningfully encompass that infinite range. The circle must be drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn; in technical terms, products whose 'cross-elasticities of demand' are small.²⁹

²⁹ *See also United States v. Grinnell Corp.*, 384 U.S. 563, 573-74 (1966) (accredited central station service a line commerce even though "there are, to be sure, substitutes" such as watchmen and audible alarms); *Borden, Inc. v. FTC*, 674 F.2d 498, 508 (6th Cir. 1982), vacated and remanded for entry of consent order, 461 U.S. 940 (1983) (bottled lemon juice a line of commerce distinct from fresh lemons: "regardless of whether one product actually can be substituted for the use of another.")

The "Cellophane" decision, *United States, v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377 (1956), does not support respondents' rigid container market. In that decision, the Court concluded that cellophane was part of an overall "flexible wrap" market along with aluminum foil and other materials. The Court determined that "a slight decrease in the price of cellophane causes a considerable number of customers of other flexible wrappings to switch to cellophane," such that there was "reasonable interchangeability" among flexible wrappings. *Id.* at 400, 404. The Court determined that cellophane, "met competition from other materials in every one of its uses." *Id.* at 399. As a result, cellophane could not constitute a relevant market. In contrast to Cellophane, however, glass containers do not meet competition in every one of their uses. Rather, for customers in many end-uses, glass is the only packaging choice. Further, Cellophane preceded the Court's market analyses in *Brown Shoe*, *Alcoa-Rome*, *Continental Can* and *Grinnell*.³⁰

Respondents argue that in the future technology may make plastic more competitive with glass. That argument fails. That a product has the potential to become a substitute does not save an anti-competitive merger. *United States v. Connecticut National Bank*, 418 U.S. 656, 663-64, 666 (1974); *United States v. Empire Gas Corp.*, 537 F.2d 296, 304 (1976); *RSR Corp.*, 88 FTC 800, 891 (1976).

The District Court in the preliminary injunction proceeding believed that the volume of commerce in the inelastic uses should be measured in relation to the glass container market. *FTC v. Owens-Illinois, Inc.*, 681 F. Supp. 27 (D.D.C.), vacated as moot, 850 F.2d 694 (D.C. Cir. 1988). The District Court found that the inelastic uses constituted \$450 million, or 25.88%, of total glass container sales.

The District Court held that a merger is lawful if only part of an overall market is adversely affected -- even where the volume of commerce affected amounts to hundreds of millions of dollars. This holding seems to be contrary to precedent. *United States v. Connecticut National Bank*, 418 U.S. at 664; *United States v.*

³⁰ *Columbia Metal Culvert Co. v. Kaiser Aluminum & Chemical Corp.*, 579 F.2d 20, 27, *cert. denied*, 439 U.S. 876 (1978) (Supreme Court decisions after Cellophane countenance separating products into narrow markets where facts justify such treatment); *United States v. CBS Inc.*, 459 F. Supp. 832, 837 (C.D. Cal. 1978).

Household Finance Corp., 602 F.2d 1255, 1257, 1264-65 (7th Cir. 1979), *cert. denied*, 444 U.S. 1044 (1980); *FTC v. Food Town Stores, Inc.*, 539 F.2d 1339, 1344, 1345 (4th Cir. 1976).

III. GEOGRAPHIC MARKET

Section 7 also requires a determination of the effects of the acquisition in an appropriate "section of the country," or relevant geographic market. The geographic market is sometimes defined as the area "in which the seller operates, and to which the purchaser can practicably turn for supplies." *Tampa Electric Co. v. Nashville Coal Co.*, 365 U.S. 320, 327 (1961).

Glass container imports represent 2.7% of the total dollar value of United States glass container sales. (F 265.) The facts of this case indicate a geographic market consisting of the continental United States. (F 277-279.) *FTC v. Bass Bros. Enterprises, Inc.*, 1984-1 Trade Cas. (CCH) ¶ 66,041 at 68,609 (N.D. Ohio 1984) (relevant geographic market is United States; "imports accounted for less than 2.5% of U.S. consumption").

The foreign glass containers that are sold in the United States consist primarily of small, high-volume glassware such as cosmetic and other specialized bottles, for which demand is so low that domestic production runs would be uneconomical. (F 270.) Foreign producers are located a far distance from United States buyers; the result is high transportation and freight costs and higher prices. Foreign firms cannot offer technical assistance and research and development support, which buyers consider important. (F 266.) Customers are concerned about the reliability and quality of foreign firms, particularly Mexican glass producers. (F 269.) Major users would not switch to foreign glass suppliers if domestic glass prices increased by 10%. (F 275, 276.)

The fact that customers do not view foreign producers as a source of supply, defines the geographic market. *Grand Union Co.*, 102 FTC at 1041; *B.F. Goodrich Co.*, 110 FTC at 289. Thus, the appropriate geographic market within which to assess the anticompetitive effects of this merger is the entire continental United States.

IV. COMPETITIVE EFFECT

In horizontal merger cases, the Commission "has focused on the extent to which the mergers confer market power on the acquiring firm or enhance the ability of firms to collude, either expressly or tacitly." *Weyerhaeuser Co.*, 106 FTC at 273-74. "[T]he worry is that [the acquisition] may enable the acquiring firm to cooperate (or cooperate better) with other leading competitors on reducing or limiting output, thereby pushing up the market price." *Hospital Corporation of America v. FTC*, 807 F.2d 1381, 1386 (7th Cir. 1986), *cert. denied*, 481 U.S. 1038 (1987).

Collusive behavior is likely to occur when a small number of firms control a large share of market output. The fewer competitors there are in a market, the easier it is for them to collude. *Hospital Corporation of America v. FTC*, 807 F.2d at 1387. The Owens-Brockway merger created a highly concentrated market. (F 281.)

A. Concentrated Market

As concentration increases, "the greater is the likelihood that parallel policies of mutual advantage, not competition, will emerge." *United States v. Aluminum Co. of America*, 377 U.S. at 280. Thus, "a crucial initial question in merger cases" is whether the merger "produces a firm controlling an undue percentage share of the relevant market, and results in a significant increase in the concentration of firms in that market." *B.F. Goodrich Co.*, 110 FTC at 303. This question is crucial because, other things being equal, a high level of concentration in a market can facilitate collusive behavior and thereby lessen price competition. *B.F. Goodrich Co.*, 110 FTC at 303; *Hospital Corp. of America*, 106 FTC at 489.

Prior to the merger, Owens and Brockway were two of the three largest manufacturers of glass containers in the United States, with 23.7% and 13.8% shares, respectively, of furnace capacity. (F 281, Table A.) Owens and Brockway competed across all of the major food and beverage segments. (F 281, Table F.) The acquisition eliminated this competition. In so doing, the merger also transformed Owens into the largest domestic glass container manufacturer, with

a 37.5% share of furnace capacity, surpassing Anchor Glass, which has a 24.3% share. (F 281, Table A.)

The Commission uses the Herfindahl-Hirschmann Index ("HHI") to analyze market structure. *B.F. Goodrich Co.*, 110 FTC at 304-14; *Hospital Corp. of America*, 106 FTC at 488; *Weyerhaeuser Co.*, 106 FTC at 280. Federal courts³¹ do so as well. The HHI measures market concentration by squaring the individual market shares of all firms in the market and adding up the squares. The HHI shows market shares between firms and gives greater weight to the market shares of the larger firms, "which likely accords with their relative importance in any anticompetitive interaction." *Hospital Corp. of America*, 106 FTC at 488. This method reflects the greater market power from horizontal mergers, for the HHI increases as the number of firms in the market decreases and as the disparity in size among those firms increases. *FTC v. PPG Industries Inc.*, 789 F.2d at 1503.

HHI "provides a better measure of the structural character of a relevant market than concentration ratios." *B.F. Goodrich Co.*, 110 FTC at 304. It reflects the combined share of the largest firms, and their shares relative to all other firms in the industry. *B.F. Goodrich Co.*, 110 FTC at 304. The HHI "also provides a basis for estimating the degree to which a small number of firms could assess supra-competitive prices without expressly cooperating with one another." *Id.*, at 304, n. 106.

An HHI calculated on melt capacity, dollar sales, unit sales, tonnage production, or unit production shows that this merger resulted in an increase in concentration to a post-merger level exceeding 2150. (F 281.) This post-merger structure creates a dangerous probability and a presumption of anticompetitive effects. *B.F. Goodrich*, 110 FTC at 314.

The Owens-Brockway merger created a four-firm concentration ratio in excess of 78% and a two-firm concentration ratio in excess of 60%. (F 281.) Lower levels of concentration establish a rebuttable presumption of violation. *Grand Union Co.*, 102 FTC at 1055

³¹ *FTC v. PPG Industries, Inc.*, 789 F.2d 1500, 1502-03 (D.C. Cir. 1986); *FTC v. Illinois Cereal Mills, Inc.*, 691 F. Supp. 1131, 1144 (N.D. Ill. 1988), *aff'd sub nom.*, *FTC v. Elders Grain, Inc.*, 868 F.2d 901 (7th Cir. 1989).

(four-firm concentration in 50% range establishes *prima facie* case);³² *Hospital Corp. of America*, 106 FTC at 488 (the post-merger HHI was 2,416, the four-firm concentration ratio was over 90%, and the merger was found unlawful).

A trend to concentration in the manufacture and sale of glass containers grew rapidly since 1980, due primarily to horizontal mergers. Since 1980, the number of firms in the industry has decreased from 26 to 17. (F 21.) Two major mergers occurred in 1987 (Ball/Incon and Anchor/Diamond-Bathurst). (CX 1451T-U.) "[W]here there has been a 'history of tendency toward concentration in the industry' tendencies toward further concentration 'are to be curbed in their incipency.'" *United States v. Continental Can Co.*, 378 U.S. at 461; *Brown Shoe Co. v. United States*, 370 U.S. at 345-46.

B. Entry Barriers

"[I]n evaluating the prospect of anticompetitive effects from a particular acquisition, the Commission must first determine whether any barriers or impediments to entry make the sustained exercise of market power feasible." *B.F. Goodrich Co.*, 110 FTC at 296, n. 63. Entry into the glass container market is difficult. (F 305-325.)

The ease of entry into the relevant market is important in analyzing the likelihood of collusion. *FTC v. Procter & Gamble Co.*, 386 U.S. at 568, 579 (1967). High barriers to entry may "confirm and even magnify the inference to be drawn" from high concentration levels. *Hospital Corp. of America*, 106 FTC at 489.

Thus, "[t]he Commission considers entry conditions to be the most important of the array of market characteristics considered in addition to market concentration figures." *Weyerhaeuser Co.*, 106 FTC at 286; *Echlin Manufacturing Co.*, 105 FTC at 410, 484 (1985). In analyzing entry conditions, it is important to assess the time required for entry to occur. "As the time and expenditures needed to overcome barriers and impediments to entry increase, the likelihood

³² *RSR Corp. v. FTC*, 602 F.2d at 1317, 1324-25 (9th Cir. 1979), *cert. denied*, 445 U.S. 927 (1980) (four-firm concentration 72.41%; combined share 19.18%); *Liggett & Myers, Inc. v. FTC*, 567 F.2d 1273, 1275-76 (4th Cir. 1977) (four-firm concentration 54.44%; combined share 15.76%).

that a given acquisition will have anticompetitive effects, *ceteris paribus*, increases as well." *B.F. Goodrich Co.*, 110 FTC at 297.

Entry barriers are long run costs of an entrant that were not incurred by incumbent firms. "The rationale underlying this definition is that low-cost incumbent firms can keep prices above the competitive level as long as those prices remain below the level that would provide an incentive to higher-cost potential entrants." *Echlin Manufacturing Co.*, 105 FTC at 485. Environmental regulations (F 315) may represent entry barriers. *Weyerhaeuser Co.*, 106 FTC at 287. Impediments to entry that do not rise to the level of entry barriers permit the continued exercise of market power. *B.F. Goodrich Co.*, 110 FTC at 297.

Entry into the production and sale of glass containers is deterred by barriers and impediments to entry. (F 305-325.) *De novo* entry would take considerable time (F 306, 307), and not be easily accomplished (F 310-323), and an entrant could not withdraw from the market without incurring the loss of much of its investment. (F 308, 309.) Thus, it is unlikely that new entry into the glass container market could quickly correct anticompetitive conduct resulting from increased concentration.

1. Lead time

Brockway acknowledges that it would take 24 to 30 months for a firm to enter the manufacture and sale of glass containers. Owens-Illinois acknowledges that the time required could be two years. Owens' most recent plant took four years to bring on stream. (F 306.)

After a plant is built, a new firm must secure orders. (F 307, 319-323.) This can be time-consuming. (F 319.) Customers will buy glass containers only from producers that have proven their goods through a qualifying program. (F 320.) An entrant must establish a record of quality production. (F 321-323.)

2. Environmental barriers

Because glass production plants create pollution, entry requires federal, state and local zoning permits. (F 315.) An entrant must

install precipitators on gas furnaces, which are costly anti-pollutant devices requiring frequent maintenance putting the entrant at a cost disadvantage relative to other producers. (F 316-318.) An entrant could use more costly electric furnaces rather than gas furnaces. (F 317.) Regulations contain a "grandfather" clause for the existing glass furnaces operated by incumbent firms (F 315), which widens the cost disadvantage facing entrants. (F 316.) "[N]ewly adopted environmental restrictions may be characterized as a barrier to entry" into the relevant market. *B.F. Goodrich Co.*, 110 FTC at 299.

3. Sunk costs

If entry efforts require the investment of "sunk" costs (costs not recoverable in case of business failure), entry is less likely to occur. *B.F. Goodrich Co.*, 110 FTC at 302, n. 96.

Much of the costs in glass container production are sunk costs. (F 308.) Glass container plants and machinery cannot be resold for their original cost. Costs for O-I's glass container plants range from \$40 million to \$110 million. (F 309.) Since a new entrant would require at least five plants to achieve multi-plant economies (F 312), capital expenditures would range from \$200 million to \$500 million. Costs for research and development, molds and sales efforts are also not recoverable. (F 309.) As a result of these sunk cost, entry is unlikely.

4. Scale economies

A minimum efficient scale glass container plant requires the capacity to produce 1% of total industry production. (F 311.) A firm would need at least five production plants, due to the cost advantages in national distribution. (F 312.) As a result, minimum efficient scale for entry purposes would require capacity of 5% of the market. "[S]ubstantial minimum efficient scale requirements are likely to impede entry" into a market. *B.F. Goodrich Co.*, 110 FTC at 301.

Glass container prices are sensitive to capacity utilization rates. When glass production capacity was underutilized, prices were depressed; as utilization rates increased, prices and profits have risen. (F 379, 380.) Entry is impeded when a new entrant must add so

much capacity to the market that it would have the likely effect of depressing prices. *B.F. Goodrich Co.*, 110 FTC at 300 and n. 85.

5. Capacity expansion

Smaller firms in this industry would have great difficulty in expanding production capacity to compete with the three leading firms. Small firms in this industry have been operating near full capacity. (F 338.) Expansion would require adding a furnace -- and overcoming regulatory hurdles.³³ (F 340.) Lack of land may prevent expansion. (F 339.) Further, it takes time to increase capacity. Brockway's planned expansion at one of its plants was to take more than two years. (F 334.) Customers are reluctant to deal with new suppliers. (F 320-322.) Expansion by existing producers face the same problems as new entrants. (F 340.)

6. Foreign producers

Glass containers produced in Mexico or Canada have little effect on domestic firms. A foreign entrant has high transportation cost. Many customers perceive that Mexican glass has poor quality and that Mexican firms cannot guarantee a dependable source of supply. (F 325.)

Glass container purchasers prefer to buy from close plants (F 267), and doubt the reliability of supply from foreign sources. (F 268.) Owens has strong ties to the leading Mexican producer (Vitro, with 75-80% of that market) and both Canadian producers (Dominion and Consumers). (F 273, 274). None of these firms is a likely competitor of Owens. *Hospital Corp. of America*, 106 FTC at 504-05; *FTC v. Bass Bros. Enterprises, Inc.*, 1984-1 Trade Cas. (CCH) ¶ 66,041 at 68,609.

³³ Electric boosting is uneconomical, due to the high cost of electricity and to the increased rate of brickwork erosion. (F 336.)

7. Vertical integration

Vertical integration by customers into the production of glass containers is not likely. (F 324.) They would face the same difficulties any other entrant would face. Zoning ordinances and air pollution standards would discourage vertical integration. Long construction times, high sunk costs and minimum efficient scale would also deter vertical integration. They would need multiple glass plants in order to serve their multiple filling locations efficiently.

C. Likelihood of Anticompetitive Behavior

A merger that enhances collusive arrangements violates Section 7. *Hospital Corp. of America*, 106 FTC at 499. In *FTC v. Elders Grain, Inc.*, 868 F.2d 901, 905 (7th Cir. 1989), Judge Posner held:

The supply of [the relevant product] was already highly concentrated before the acquisition, with only six firms of any significance. The acquisition has reduced that number to five. This will make it easier for leading members of the industry to collude on price and output without committing a detectable violation of Section 1 of the Sherman Act or Section 5 of the FTC Act, both of which forbid price-fixing. The penalties for price-fixing are now substantial, but they are brought into play only where sellers actually agree on price or output or other dimensions of competition; and if conditions are ripe, sellers may not have to communicate or otherwise collude overtly in order to coordinate their price and output decisions; at least they may not have to collude in a readily detectable manner. [Citations omitted.]

1. Inelastic demand for glass containers

If a product has no practical substitute, demand for the product diminishes only slightly when price increases. This is known as inelastic demand.³⁴ Inelastic demand enhances the anticompetitive dangers of an acquisition. *Hospital Corporation of America v. FTC*, 807 F.2d at 1388-89; *Marathon Oil Co. v. Mobil Corp.*, 669 F.2d 378, 381 (6th Cir. 1981), *cert. denied*, 455 U.S. 982 (1982); *B.F. Goodrich Co.*, 110 FTC at 317-18. The likelihood of collusion is greater when

³⁴ Inelastic demand exists when demand for a product does not fall if the price of the product increases. *FTC v. Bass Brothers Enterprises, Inc.*, 1984-1 Trade Cas. (CCH) ¶ 66,041 at 68,613.

demand is inelastic. The more inelastic is demand, the greater the degree to which producers could collusively sustain a price increase without losing a sale. *Hospital Corporation of America v. FTC*, 807 F.2d at 1388-89.

Here, there are several glass container submarkets in which demand is highly inelastic: baby food and baby juice (F 105-133), spaghetti sauce (F 134-145), jams and jellies (F 146-156), pickles (F 157-164), mayonnaise (F 185-197), wine coolers (F 210-213). In other submarkets, the demand for glass containers is inelastic in certain sizes or quality: premium wine (F 199), shelf-stable juice (F 165, 169, 172, 184), distilled spirits (F 222).

2. Buyer power

Buyer concentration in the glass container market is low. The exercise of "buyer power" is unlikely to thwart the effects of a collusive agreement among the leading glass container producers. None of the customers has more than 2.5% of total glass container purchases, or \$100 million in glass volume. Owens' largest food customer accounted for 3% of Owens' sales volume. (F 283-285.) This disparity in concentration between glass sellers and buyers is conducive to seller market power, not buyer power. *B.F. Goodrich*, 110 FTC at 324. Further, in this industry, buyers are not informed. They lack information about their suppliers' costs. (F 284.)

Little arbitrage occurs in this industry.³⁵ Beer bottles, which are narrow-neck containers, could not be used to package pickles, mayonnaise and jams and jellies, which require wide-mouth containers. And, containers that look similar are not necessarily interchangeable. A buyer risks damage and down-time if a supply of glass causes a production breakdown. (F 290.) Many end-users, including beer companies such as Anheuser-Busch, use glass containers produced from proprietary molds bearing the company's logo; a company would not jeopardize its trademark and marketing image by allowing other companies to use such bottles. (F 286.)

³⁵ In markets where consumers "cannot arbitrage or resell" the relevant product, "discrimination among different groups of consumers is possible." *Hospital Corp. of America*, 106 FTC at 499-500.

Distributors who deal in stock containers are supplied by the firms most likely to collude as a result of the merger. Owens can prevent arbitrage through this channel by limiting its sales of stock containers to distributors. (F 293.)

Many customers would not substitute stock containers for their own proprietary containers. Such firms pay more for a proprietary jar for brand image. (F 287.) Arbitrage is costly. Shipping costs increase. Risk of breakage from added transport increases, and the reliability of supply decreases. The reselling customer requires a profit. (F 290, 291.) Customers buying through arbitrage would forgo services which manufacturers provide, such as technical assistance and research and development. (F 292.) Vertically integrated firms also would be unlikely to sell glass to competitors, and their competitors would be unlikely to rely on them for supply. Containers used for food and beverages must meet high quality standards. End-users cannot risk their good will by purchasing containers that have not been proven to meet quality standards. (F 289.)

It is unlikely that arbitrage could be used to defeat a price increase in this industry; as a result effective collusion is more likely. The merger is likely to create adverse effects on competition and pricing. Many buyers expect glass producers to raise prices or shut down capacity. Here, "representatives from groups likely to be harmed by any diminution of competition" in the glass container market testified that anticompetitive effects are a likely result from the acquisition. (F 389.) *FTC v. Great Lakes Chemical Corp.*, 528 F. Supp. 84, 94-95 (N.D. Ill. 1981).

3. Small producers

The small glass container producers are unlikely to disrupt noncompetitive behavior by the larger firms. (F 294-304.) "[I]n an oligopolistic market, small companies may be perfectly content to follow the high prices set by the dominant firms." *United States v. Philadelphia National Bank*, 374 U.S. 321, 367 n. 43 (1963). In the glass container market small firms follow price increases by the major firms. (F 341.) They have higher production and distribution cost than the large firms. Having only one or two plants, they could not easily expand or divert production. (F 326-338.)

Many small producers do not operate minimum-efficient scale plants. Their unit production costs are higher than the larger, more efficient plants. (F 294-304, 310, 311, 341, 342.) High-speed equipment of the leading glass producers lowers production costs for long production runs. Most small firms produce glass on slower, more costly machines. These firms would have difficulty producing glass containers at a cost that would allow them profitably to sell below the collusive price. (F 331-333.)

Large firms have lower costs because they have several plants. (F 311, 312, 337, 338.) Five glass container manufacturers have multiple plants across the country. Of the other twelve glass container manufacturers, one has plants in more than one state. An efficient firm requires five plants, but no firm outside the larger group operates more than two plants. Small firms have higher costs because their plants are less efficient than the major producers' plants, and because they operate only one or two plants while the major firms operate five or more. (F 294-304, 311-313, 331-335.)

Small producers operate their plant at capacity. They are producing as many containers as their equipment will make. This is known as "high capacity utilization." (F 338.) Small firms produce glass on inferior equipment and with small furnaces. (F 331-335.) These companies face barriers to expanding their production capacity. (F 305-334.) In a concentrated market with difficult entry and expansion, small firms are unlikely to be able to "compete away" business from the largest firms if those firms collude. *Hospital Corp. of America*, 106 FTC at 488, n. 19.

4. Price cutting

If the glass container industry did collude to raise price or restrict output, it is unlikely that one of these firms would be able to gain business by cutting price ("cheat") despite the "cartel." A colluding firm can cheat on an anticompetitive agreement by using excess capacity, or by diverting capacity, to gain business by cutting prices. Both possibilities are unlikely to occur.

a. *Capacity Utilization*

Excess capacity in an industry exerts downward pressure on prices. Firms with no excess capacity have no incentive to cut prices in hope of selling more of their product. *B.F. Goodrich Co.*, 110 FTC at 328-29. Glass container producers have recently made numerous plant and furnace shutdowns and capacity utilization is high. (F 350.) The glass container industry currently is operating at near full capacity. (F 352-378.)

Owens' major competitors are operating at near full capacity. (F 368-378.) Owens presently has some excess capacity, but that is likely to be a temporary condition. (F 379, 380.) Owens' chairman stated that the objective of the acquisition is to increase Owens' share of the total glass container market by adding to Owens' capacity without adding new capacity to the industry. (F 10.) Owens intends to shut down two or three plants within the coming year in order to prevent any excess capacity. (F 380.)

b. *Diversion*

Another factor that facilitates collusion in this industry is that diversion by members of the collusive group is unlikely to occur. (F 381-400.) Once a supplier drops a customer, it is difficult to regain that customer's business. It is unlikely that firms would defeat a collusive agreement by diverting capacity to new customers. (F 384-388.)

5. *Detection*

Collusive agreements last if participating firms can detect and retaliate against deviations from the agreed prices. *B.F. Goodrich Co.*, 110 FTC at 294-95. Prices are widely known in the glass container market. (F 390-396.) This facilitates collusion by detection of cheating on a collusive arrangement. *United States v. United States Gypsum Co.*, 438 U.S. 422, 441, n. 16 (1978); *United States v. Container Corp. of America*, 393 U.S. 333, 337 (1969).

Glass producers keep track of competitive bids. They also know productive capacity rates of competitors. (F 393-396.) *B.F. Goodrich*

Co., 110 FTC at 336. They know their customers' packaging plants, and can detect attempts to switch suppliers. Producers mark their containers with a company logo and with codes identifying the container's production plant and year of production. (F 390, 391.)

Buyers in the glass container market prefer to stay with their current suppliers. (F 319.) Users do not switch their business frequently. (F 320-323.) Major customers have long supply contracts. (F 319.) This makes it easier to track prices.³⁶ Purchasers discuss the details of competitive bids with potential suppliers. (F 392.)

Glass container supply agreements contain a meeting competition clause (F 395), which allows the glass container supplier to "quickly discover price concessions offered by competing firms." *B.F. Goodrich Co.*, 110 FTC at 325. Pursuant to such clauses, "buyers are permitted to cancel purchases if they can secure lower prices elsewhere, but are required to give sellers the opportunity to meet competing offers." *Id.* By encouraging customers to disclose competing price offers, these clauses make cheating on a collusive arrangement less likely, because "when sales are made openly, cheating can be detected quickly and easily, and retaliation by rival firms is consequently more likely." *B.F. Goodrich Co.*, 110 FTC at 325.

Glass container producers give customers advance notice of price increases, which are communicated to competitors. (F 392.) The demand for glass containers is stable. (F 17.) Detection of price cuts is easy. These factors make any collusive scheme a simple task.

6. Policing

With Brockway, Owens controls 38% of the market, and is the largest firm in the industry. Owens also has the lowest-cost output per machine in the industry. (F 397-399.) Owens can discipline a cheater by underbidding it. (F 397.) The Brockway acquisition provides it with a greater ability to take disciplinary actions. (F 400.)

Owens can set a high price knowing that the other firms will follow. (F 341, 342.) These glass producers can raise prices because

³⁶ *FTC v. Bass Bros. Enterprises, Inc.*, 1984-1 Trade Cas. (CCH) ¶ 55,041 at 68,612.

inelastic customers will not switch from glass in response to a price increase above the competitive level. *Hospital Corporation of America v. FTC*, 807 F.2d at 1388.

7. Past antitrust violations

The leading firms in the glass container market have a history of violations of the antitrust laws.³⁷ In *Hartford-Empire Co. v. United States*, 323 U.S. 386 (1945), affirming with modified relief, 46 F. Supp. 541 (W.D. Ohio 1942), the Supreme Court ruled that the leading glass container manufacturers at that time, including Owens-Illinois, violated Sections 1 and 2 of the Sherman Act (15 U.S.C. 1, 2) by unlawful monopolization and restraint of trade in the glass container industry. The defendants illegally conspired to restrict the licensing of two competing glass container technologies in order "to suppress competition in the manufacture of unpatented glassware," to "maintain prices," and to "allot production" of glass containers. 323 U.S. at 400.

In *Hartford-Empire*, violations occurred over a 25 year period, 46 F. Supp. at 547. In 1903, Owens invented the first fully automatic glassware manufacturing machine (the "suction" feeder), and licensed its use to certain glass manufacturers "for specific kinds of ware." *Id.* at 546-48.

Owens "maintained an influence over the industry which it thus divided by acquiring substantial stock interests in the licensed companies." *Id.* at 547. The non-licensed firms "were faced with the prospect of being forced entirely out of business unless a competing machine [for the suction feeder machine] could be found." *Id.* at 548. Hartford Company and Empire Company (which merged in 1922) pioneered development of a competing machine - the gob feeder - and proceeded to license the machine to firms to make specific kinds of ware. *Id.*

Owens and Hartford were competitors until 1924, when they entered into an agreement to restrict licensing practices. (*Id.* at

³⁷ "[T]he pre-acquisition anticompetitive conduct of a firm is probative of similar conduct being repeated in the future." *Crouse-Hinds Co. v. InterNorth Co.*, 518 F. Supp. 416, 422, n. 10 (N.D.N.Y. 1980).

548-49.) They conspired in violation of the Sherman Act to monopolize the production and sale of glass containers generally, milk bottles (*Id.* at 580) and "fruit jars." (*Id.* at 582.)

Following the Supreme Court's decision, a judgment was entered in 1945 enjoining, *inter alia*, patent monopoly, restrictions of glass-making machinery, price-fixing, market allocation, interlocking directorates, and acquisitions without prior approval. *United States v. Hartford-Empire Co. et al.*, 1978 Trade Cas. (CCH) ¶ 62,057 at 74,567 (N.D. Ohio 1976) (amending judgment in part, but not injunctive provisions). The judgement terminated on October 31, 1985. *Id.*

D. Productivity Improvements

Cost decreases are expected from technology improvements in the production of glass containers. (F 401-408.) By coordinating their behavior, Owens and the other major suppliers with efficient, high productivity equipment will be able to withhold from customers these expected cost savings. In a noncompetitive market, producers can maintain prices at supracompetitive levels even as costs decrease. *United States v. Hartford Empire Co.*, 46 F. Supp. at 620.

V. CONCLUSION

The issue here is whether the acquisition is likely to hurt consumers, as by making it easier for firms to collude, expressly or tacitly, and thereby force price above the competitive level. *Hospital Corporation of America v. FTC*, 807 F.2d 1381, 1386 (7th Cir. 1986), *cert. denied*, 481 U.S. 1038 (1987). The intent of Section 7 is to arrest such a restraint of trade in its incipency. *Brown Shoe Co. v. United States*, 370 U.S. 294, 317-18 (1962); *FTC v. Procter & Gamble Co.*, 386 U.S. 568, 577 (1967).³⁸

The merger put Owens-Illinois first in the market, with 38% of the production and sale of glass container in the United States. (F

³⁸ An acquisition that violates Section 7 also violates Section 5. *United States v. Papercraft Corp.*, 540 F. 2d 131, 136-38 (3rd Cir. 1976).

281, Table B, D.) The top two firms control 60%. (F 281, Table A.) The merger eliminated the firm that Owens regarded as its strongest competitor and will facilitate collusion. (F 341-409.) The relevant product market has high entry barriers (F 305-25), and a history of market allocation and antitrust violations. The glass container industry is ripe for collusion. The facts of this case establish a violation of 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.

VI. REMEDY

Once an acquisition is found to be unlawful under Section 7, the principle purpose of relief "is to restore competition to the state in which it existed prior to, and would have continued to exist but for, the illegal merger." *B.F. Goodrich Co.*, 110 FTC at 345. The most effective method for accomplishing this purpose is divestiture. *Ford Motor Co. v. United States*, 405 U.S. 562, 573 (1972); *United States v. E.I. du Pont de Nemours & Co.*, 366 U.S. 316, 328-31 (1961). To ensure that the divestiture is not made ineffectual, future mergers or acquisitions in the same market should be prohibited for ten years without the prior approval of the Commission.

CONCLUSIONS OF LAW

1. The Federal Trade Commission has jurisdiction over the subject matter of this proceeding and over respondents Owens-Illinois, Inc. ("Owens"), BI Acquisition Corporation ("BIAC"), and Brockway, Inc. ("Brockway").

2. At all times relevant herein, Owens has been, and is now, a corporation engaged in commerce, as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. 44.

3. At all times relevant herein, BIAC has been, and is now, a corporation engaged in commerce, as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "com-

merce" is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. 44.

4. At all times relevant herein, Brockway has been, and is now, a corporation engaged in commerce, as "commerce" is defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. 12, and is a corporation whose business is in or affecting commerce as "commerce" is defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. 44.

5. Owens, BIAC and Brockway entered into an Agreement and Plan of Merger, dated September 17, 1987, pursuant to which Owens, through BIAC, commenced a cash tender offer for all outstanding voting securities of Brockway for \$60 per share. Pursuant to a second agreement dated September 17, 1987, among Owens, BIAC and Brockway, Owens acquired the right to purchase up to 2,300,000 shares of authorized but unissued shares of Brockway for \$60 per share. The total value of the cash tender offer was approximately \$750 million for the shares, plus an additional \$110 million for expenses and debt retirement. The acquisition was completed on April 12, 1988.

6. A line of commerce within which to evaluate the competitive effects of the acquisition is the manufacture and sale of glass containers. Additional lines of commerce are the markets for the supply of glass containers to the following end-use segments: (a) Baby food and baby juice; (b) Spaghetti sauce; (c) Jams and jellies; (d) Pickles; (e) Shelf-stable juices; (f) Mayonnaise; (g) Wine; (h) Wine coolers; and (i) Distilled spirits.

7. An appropriate section of the country within which to evaluate the competitive effects of the acquisition is the continental United States.

8. Prior to and at the time of the acquisition, Owen and Brockway were competitors in the manufacture and sale of glass containers in the United States.

9. The effect of the acquisition has been or may be substantially to lessen competition or tend to create a monopoly in the aforesaid lines of commerce and section of the country in violation of Section 7 of the Clayton Act, as amended, and Section 5 of the Federal Trade Commission Act, as amended, in the following ways:

- (a) It eliminates Brockway as a competitive force in the relevant market;
- (b) It eliminates direct competition between Owens and Brockway in the relevant market; and
- (c) It increases concentration and the likelihood of anticompetitive conduct among firms in the relevant market.
- (d) It increases the likelihood that firms in the relevant market will increase prices.

10. An order is necessary and appropriate to remedy the violation of law.

ORDER

I.

It is ordered, That for purposes of this order the following definitions shall apply:

A. "*Owens*" means respondent Owens-Illinois, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its principal place of business in Toledo, Ohio, its directors, officers, agents, and employees, and its parents, subsidiaries, including BIAC, divisions, affiliates, successors, and assigns.

B. "*BIAC*" means respondent BI Acquisition Corporation, a corporation organized, existing and doing business under and by virtue of the laws of the State of New York, with its principal place of business in Toledo, Ohio, its directors, officers, agents, and employees, and its parents, subsidiaries, divisions, affiliates, successors, and assigns.

C. "*Brockway*" means respondent Brockway, Inc., a corporation organized, existing and doing business under and by virtue of the laws of the State of New York, with its principal place of business located in Jacksonville, Florida, its directors, officers, agents, and employees, and its parents, subsidiaries, divisions, affiliates, successors, and assigns.

D. "*Glass container*" means a bottle, jar, or other container made of glass that can be used to contain food, beverages, or other products.

E. "*Brockway glass container business*" means the glass container business acquired by Owens through the acquisition of Brockway including all manufacturing, production, marketing, sales, warehousing, distribution, and research and development facilities and all other assets, titles, properties, interests, and rights and privileges, tangible and intangible, related thereto, together with all additions and improvements thereto, and all other facilities, assets, titles, properties, interests, and rights and privileges as may be necessary to reconstitute Brockway as a viable competitor in the manufacture and sale of glass containers to the same extent as existed prior to the acquisition by Owens.

(1) Such facilities shall include all of the Brockway plants producing glass containers acquired by Owens, namely, the plants located in Montgomery, Alabama; Zanesville, Ohio; Freehold, New Jersey; Lapel, Indiana; Pomona and Oakland, California; Crenshaw and Brockway, Pennsylvania; Muskogee and Ada, Oklahoma; and Danville, Virginia.

(2) Such assets, titles, properties, interests, and rights and privileges shall include leases; funded employee benefit pension plans; raw material supply arrangements; glass container technology; patents; licenses; customer lists; trademarks; trade names; manufacturing, production, marketing, sales, warehousing, distribution, and research and development know-how; and goodwill.

(3) If any Brockway glass container plant has been sold, closed, shut down, disposed of, or is otherwise no longer operational, the Brockway glass container business shall include the closest operational Owens' plant that has glass container production tonnage capacity equal to or greater than the tonnage capacity of such Brockway plant.

(4) If any other Brockway facilities, assets, titles, properties, interests, and rights and privileges have been sold, closed, shut down, disposed of, or are otherwise no longer operational, the Brockway glass container business shall include such other facilities, assets,

titles, properties, interests, and rights and privileges that are in the same or better condition than those that were acquired.

(5) In the event that any Brockway facilities, assets, titles, properties, interests, and rights and privileges are no longer operational to the same extent as existed prior to the acquisition by Owens, except for normal wear and tear, then the Brockway glass container business shall include such other facilities, assets, titles, properties, interests, and rights and privileges that are in the same or better condition than those that were acquired.

II.

It is furthered ordered, That within twelve (12) months from the date this order becomes final, Owens shall divest, absolutely and in good faith, the Brockway glass container business. The purpose of the divestiture is to reestablish the Brockway glass container business as a viable competitor engaged in the manufacture, distribution, sale, and research and development glass containers; and to remedy the lessening of competition resulting from the acquisition of Brockway by Owens. The divestiture shall be only to an acquirer, and only in a manner, that receive the prior approval of the Federal Trade Commission and, if the divestiture of the Brockway glass container business is to be accomplished by a public offering all stock and other share capital of a corporation containing the Brockway glass container business, such public offering shall also only be in a manner that receives the prior approval of the Commission. In the event of a public offering, Owens shall submit to the Commission for its prior approval the plan for such public offering at least 90 days prior to such public offering. No person who is an officer, director or executive employee of Owens or who owns or controls directly or indirectly more than one (1) percent of the stock of Owens shall be an officer, director or executive employee of the corporation or shall own or control directly or indirectly more than one (1) percent of the stock of the corporation.

Pending divestiture, Owens shall take all measures necessary to maintain the Brockway glass container business in its present condition and to prevent any deterioration, except for normal wear and tear, of any part of the Brockway glass container business, so as

not to impair the operating viability or market value of the Brockway glass container business.

III.

It is further ordered, That at the time of the divestiture required by this order, Owens shall provide to the acquirer of the Brockway glass container business, or to the corporation in the event of a public offering, on a nonexclusive basis, all glass container technology (including patents, licenses, and know-how) not acquired from Brockway and used by Owens, or developed by Owens for use, in connection with the Brockway glass container business; Owens shall not interfere with any attempt by such acquirer of the Brockway glass container business, or the corporation in the event of a public offering, to employ any personnel previously or presently employed by Brockway, or presently employed by Owens, in connection with the operation of the business to be divested nor seek to enforce any employment contract against such personnel; and Owens shall not burden the Brockway glass container business, or the corporation in the event of a public offering, with any obligations that may impair the viability of the business or frustrate the purposes of the divestiture, and in no event shall any obligations, apart from funded employee benefit pension funds, transferred by Owens be any greater than those carried by Brockway at the time of its acquisition by Owens.

IV.

It is further ordered, That at the time of the divestiture required by this order, Owens shall assign to the acquirer of the Brockway glass container business, or to the corporation in the event of a public offering, all customer agreements or understandings, whether formal or informal, and all customer records and files relating to the sale of glass containers produced in or supplied by the Brockway glass container business.

V.

It is further ordered, That:

A. If Owens has not divested the Brockway glass container business within the twelve-month period provided in paragraph II of this order, Owens shall consent to the appointment of a trustee to effect the divestiture pursuant to paragraph II (1) by the Federal Trade Commission or (2) in any action that the Commission brings pursuant to Section 5(a)(1) of the Federal Trade Commission Act, 15 U.S.C. 45(a)(1), or any other statute enforced by the Commission. Neither the appointment of a trustee nor a Commission decision not to appoint a trustee under this paragraph shall preclude the Commission from seeking civil penalties and any other relief available to it, including a court-appointed trustee, pursuant to Section 5(a)(1) of the Federal Trade Commission Act, 15 U.S.C. 45(a)(1), or any other statute enforced by the Commission, for any failure by Owens to comply with this order.

B. If a trustee is appointed by the Commission or a court pursuant to this paragraph, Owens shall consent to the following, terms and conditions regarding the trustee's powers, authority, duties, and responsibilities:

(1) The Commission shall select the trustee, subject to the consent of Owens, which consent shall not be unreasonably withheld. The trustee shall be a person with experience and expertise in acquisitions and divestitures.

(2) The trustee shall have the exclusive power and authority, subject to the prior approval of the Commission, to divest the Brockway glass container business. The trustee shall have twelve (12) months from the date of appointment to accomplish the divestiture. If, however, at the end of the twelve-month period, the trustee has submitted a plan of divestiture or believes that divestiture can be accomplished within a reasonable time, the divestiture period may be extended by the Commission and, in the case of a court-appointed trustee, by the court.

(3) The trustee shall have full and complete access to the personnel, books, records and facilities of the Brockway glass con-

tainer business, and Owens shall develop such financial or other information relevant to the Brockway glass container business as the trustee may reasonably request. Owens shall cooperate with the trustee, and shall take no action to interfere with or impede the trustee's accomplishment of the divestiture. Any delays in divestiture caused by Owens shall extend the time for divestiture under this paragraph in an amount equal to the delay, as determined by the Commission.

(4) The trustee shall use his or her best efforts to negotiate the most favorable price and terms available in such contract that is submitted to the Federal Trade Commission, subject to Owens' absolute and unconditional obligation to divest at no minimum price and the purpose of the divestiture as stated in paragraph II of this order and subject to the prior approval of the Commission. If the divestiture is not to be through a public offering of a corporation containing the Brockway glass container business and the trustee receives *bona fide* offers from more than one prospective acquirer, and if the Commission approves more than one such acquirer, the trustee shall divest to the acquirer selected by Owen from among those approved by the Commission.

(5) The trustee shall serve, without bond or other security, at the cost and expense of Owens on such reasonable and customary terms and conditions as the Commission may set. The trustee shall have authority to retain, at the cost and expense of Owens, such consultants, attorneys, investment bankers, business brokers, accountants, appraisers, and other representatives and assistants as are reasonably necessary to carry out the trustee's duties and responsibilities. The trustee shall account for all monies derived from the divestiture and for all expenses incurred. After approval by the Commission and, in the case of a court-appointed trustee, by the court of the account of the trustee, including fees for his or her services, all remaining monies shall be paid to Owens, and the trustee's power shall be terminated. The trustee's compensation shall be based at least in significant part on a commission arrangement contingent on the trustee divesting the Brockway glass container business.

(6) Owens shall indemnify the trustee and hold the trustee harmless against any losses, claims, damages, or liabilities arising in

any manner out of, or in connection with, the trustee's duties under this order.

(7) Within sixty (60) days after appointment of the trustee and subject to the approval of the Commission and, in the case of a court-appointed trustee, of the court, Owens shall, consistent with provisions of this order, transfer to the trustee all rights and powers necessary to permit the trustee to effect the divestiture required by this order.

(8) If the trustee ceases to act or fails to act diligently, a substitute trustee shall be appointed in the same manner as provided in this order.

(9) The Commission and, in the case of a court-appointed trustee, the court may on its own initiative or at the request of the trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this order.

(10) The trustee shall have no obligation or authority to operate or maintain the Brockway glass container business.

(11) The trustee shall report in writing to Owens and to the Commission every sixty (60) days concerning the trustee's efforts to accomplish divestiture.

VI.

It is further ordered, That for a period of ten (10) years from the date this order becomes final Owens shall not, without the prior approval of the Federal Trade Commission, directly or indirectly acquire all or any part of the stock, share capital, equity interest, or assets of any person engaged in the manufacture or sale of glass containers in the United States other than the acquisition of manufactured product in the ordinary course of business.

VII.

It is further ordered, That:

A. Owens shall, within sixty (60) days after the date this order becomes final and every sixty (60) days thereafter until it has fully complied with the provisions of paragraph II of this order, submit in

writing to the Commission a verified written report setting forth in detail the manner and form in which it intends to comply, is complying, and has complied with these provisions. Such compliance reports shall include, among other things that may be required from time to time, a full description of all contacts and negotiations relating to the divestiture of the Brockway glass container business, including the name and address of all parties contacted, copies of all written communications to and from such parties, and all internal memoranda, reports and recommendations concerning divestiture.

B. On the first anniversary of the date this order becomes final, on every anniversary thereafter for the following nine (9) years, and at such other times as the Commission or its staff may request, Owens shall submit a verified written report setting forth in detail the manner and form in which Owens intends to comply, is complying, and has complied with paragraph VI of this order.

VIII.

It is further ordered, That Owens shall notify the Federal Trade Commission at least thirty (30) days prior to any proposed corporate change, such as dissolution, assignment or sale resulting in the emergence of a successor corporation, the creation or dissolution of subsidiaries or any other change in the corporation, which may affect compliance with the obligations arising out of this order.

OPINION OF THE COMMISSION

BY STEIGER, *Chairman*:

I. INTRODUCTION

On September 17, 1987, Owens-Illinois, Inc. ("Owens"), one of the nation's two largest producers of glass containers, acting through its acquisition subsidiary, BI Acquisition Corp., initiated a cash tender offer to acquire Brockway, Inc., the third largest producer of glass containers in the United States. The acquisition was completed on April 12, 1988, after the United States District Court for the District of Columbia refused to issue a preliminary injunction, *FTC*

v. Owens-Illinois, Inc., 681 F. Supp. 27 (D.D.C.), *vacated as moot*, 850 F.2d 694 (D.C. Cir. 1988), and the United States Court of Appeals for the District of Columbia Circuit denied the Commission's request for an injunction pending appeal. An administrative complaint was issued, and an administrative trial ensued. On September 11, 1989, Administrative Law Judge James P. Timony issued an initial decision finding that the effect of the acquisition has been or may be substantially to lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act and ordered Owens to divest the Brockway glass container business. Owens, BI Acquisition Corp., and Brockway have appealed. For the reasons set forth below, the complaint is dismissed.

Owens is a manufacturer of various packaging products, including glass containers, plastic containers, and specialty packaging products. For the year ended December 31, 1987, Owens had net sales of approximately \$3.1 billion and total assets of approximately \$4.5 billion. That year it produced glass containers in 16 widely dispersed plants. CX 1451B.¹ Its principal place of business is in Toledo, Ohio.

Brockway manufactured glass, plastic and metal containers, caps, lids and closures for packaging consumer and industrial products. In 1986 Brockway had net sales of \$1.1 billion and assets of \$494.3 million. That year it produced glass containers in 11 widely dispersed plants (CX 1451B), and its principal place of business was in Jacksonville, Florida.

¹ The following abbreviations are used in this opinion:

ID	--	Initial decision page number
IDF	--	Initial decision finding number
Tr.	--	Transcript of testimony page number
OA Tr.	--	Transcript of Commission oral argument page number
CX	--	Complaint counsel's exhibit number
RX	--	Respondents' exhibit number
RAB	--	Respondents' appeal brief
CAB	--	Complaint counsel's answering brief
RRB	--	Respondents' reply brief

Owens and Brockway are not the only producers of glass containers in the United States. Anchor/Diamond-Bathurst (with the industry's greatest tonnage production and capacity and with dollar sales only slightly below Owens' pre-acquisition levels), Ball-Incon, and Triangle all hold more than 7.9% market shares based on 1987 dollar sales. In addition, the initial decision lists 13 other glass-container producers with 1987 market shares ranging from .3% to 3.0%. *See* ID 45 at Table B, a copy of which is appended hereto.

Glass containers are used for packaging a variety of goods, including food, soft drinks, alcoholic beverages, juices, chemicals, and cosmetics. The containers vary in shape, size, color, and method of closure, and the characteristics of each packaged good affect the attributes needed in its glass containers.

Glass containers have some characteristics which other types of packaging materials, such as metal cans and plastic containers, historically have found difficult to duplicate. Glass containers are clear, impermeable (preventing air or moisture from entering and gases from escaping), resealable, retortable (allowing sterilization within the jar at high temperature and high pressure), rigid (facilitating high-speed filling), inert (not interacting with and affecting the taste of their contents), and recyclable. In contrast, metal cans are opaque, cannot be readily resealed, and may impart a taste to their contents. Plastic containers are more permeable (particularly in smaller sizes), lack rigidity, have not combined clarity with retortability, and have some recycling disadvantages. However, recent years have seen the introduction of polyethylene terephthalate ("PET") and multi-layer plastic containers which replicate many of the qualities formerly unique to glass.

Characteristics of each end-use good dictate its packaging needs and define the range and relative desirability of its packaging options. For some uses glass has prevailed; for others plastic, metal, or paper has predominated. In recent years several products previously packaged largely in glass, such as ketchup, peanut butter, and family-size soft drinks, have converted in significant part to plastic. Other goods, perhaps with greater need for impermeability, retortability or other qualities better provided by glass, have remained predominantly glass users. A central factual issue in this case concerns the degree to which glass containers for these remaining

predominantly glass-packaged end-uses are subject to competition from metal, plastic, or paper.

The initial decision defines two distinct classes of product market. First, it concludes that a broad market consisting of all glass containers is a relevant product market for purposes of this case. Second, it finds that in nine end-use segments the ability to substitute away from glass packaging remains limited. These uses, referred to by complaint counsel as the inelastic end-use segments, are (1) shelf-stable juices; (2) distilled spirits; (3) spaghetti sauce; (4) jams and jellies; (5) mayonnaise; (6) pickles; (7) wine coolers; (8) wine; and (9) baby food and baby juice.² Complaint counsel assert, and the initial decision held, that in addition to an all-glass-container market, the supply of glass containers for each of the nine allegedly inelastic end-use segments constitutes a relevant product market in which the effect of Owens' acquisition of Brockway may be substantially to lessen competition.

Respondents have appealed on two principal grounds. They argue first that the appropriate product market includes all rigid containers, whether made of glass, plastic, metal, or paper. Second, respondents claim that anticompetitive effects from the Brockway acquisition are economically implausible because of the difficulties that would confront any collusive effort selectively to raise price only on glass containers destined to the allegedly inelastic end-use segments. We address these contentions below.³

² As this case has progressed, the list of allegedly inelastic end-use segments has been narrowed. In earlier stages of this litigation, complaint counsel included glass containers used for soluble beverage products (focusing on instant tea and coffee), scientific, chemical and laboratory applications, and single-serve soft drinks among the allegedly inelastic end-use segments. The administrative law judge excluded from evidence complaint counsel's proffer of proof as to soluble beverage products, ID at 71 n.24, denied complaint counsel's claims as to scientific, chemical and laboratory application for failure of proof, *id.*, and determined that, to the extent issues had been joined, single-serve soft drinks had not been shown to be a relevant market. ID at 70. Complaint counsel have not appealed these rulings.

³ In addition to the primary arguments identified in the text, respondents raise numerous subsidiary challenges to the procedural and substantive validity of the initial decision and complaint counsel's case. Indeed, respondents dispute 224 of the initial decision's findings of fact. Because of the determinations reached on

II. RELEVANT MARKETS

The first step in analyzing the likely competitive effects of an acquisition is to define the relevant product and geographic markets. We find the initial decision's conclusions as to geographic market well-supported, but conclude after review of both theoretical and factual considerations that only a portion of the initial decision's product market determinations can be sustained.

A. Product Market: Theoretical Considerations

1. General Principles

In merger/acquisition analysis, the goal of the market definition process is to identify those sectors of the economy which may be exposed by the transaction to anticompetitive price increases. To the extent that a grouping of sales in which customers may be victimized by market power can be identified, concerns which may justify invoking the antitrust laws are raised.

In keeping with these considerations, a market may be defined as "any grouping of sales whose sellers, if unified by a hypothetical cartel or merger, could raise prices significantly above the competitive level." *H. J., Inc. v. International Telephone & Telegraph Corp.*, 867 F.2d 1531, 1537 (8th Cir. 1989), *quoting*, P. Areeda & H. Hovenkamp, *Antitrust Law* ¶ 518.1 (1987 Supp.) ("Areeda"). Similarly, paragraph 2.0 of the U.S. Department of Justice Merger Guidelines, reprinted in 4 Trade Reg. Rep. (CCH) ¶ 13,103 (1984) ("Merger Guidelines")⁴ explains:

respondents' principal arguments, it is unnecessary for the Commission to address their subsidiary claims or to resolve factual disputes other than as set forth in this opinion.

⁴ Analytical principles which underlie the Commission's evaluation of horizontal mergers are set forth in the Statement of Federal Trade Commission Concerning Horizontal Mergers, reprinted in 4 Trade Reg. Rep. (CCH) ¶ 13,200 (1982) ("FTC Statement"). In many instances the Commission's evaluation is also informed by principles and standards articulated in the Merger Guidelines.

The standards in the Guidelines are designed to ensure that the Department analyzes the likely competitive effect of a merger within economically meaningful markets, *i.e.*, markets that could be subject to the exercise of market power. Accordingly, for each product of each merging firm, the Department seeks to define a market in which firms could effectively exercise market power if they were able to coordinate their actions. Formally, a market is defined as a product or group of products and a geographic area in which it is sold such that a hypothetical, profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products in that area would impose a "small but significant and nontransitory" increase in price above prevailing or likely future levels.

The ability of present suppliers to increase price is subject to constraint by the reactions of customers and the responses of other suppliers. To the extent that buyers are able to shift their purchases to alternative products (*i.e.*, to engage in "demand-side" substitution), lost sales may render supracompetitive price increases unprofitable. The Supreme Court alludes to these demand-side considerations with references to "reasonable interchangeability of use"⁵ and "cross-elasticity of demand between the product itself and substitutes for it."⁶ To the extent that suppliers not presently producing the product are likely to redirect existing facilities (*i.e.*, to engage in "supply-side" or "production" substitution) to supply the product, their short-run output may prevent price from rising. *See Brown Shoe*, 370 U.S. at 325 n.42 ("The cross-elasticity of production facilities may also be an important factor in defining a product market within which a vertical merger is to be viewed."); *Weyerhaeuser Co.*, 106 FTC 172, 274 (1985). By (1) delineating a grouping of sales for which demand-side substitution is unlikely to deter supracompetitive pricing and (2) identifying all producers of those sales, either as of the present or after supply-side substitution, we have defined the scope

⁵ *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962). *See also United States v. E. I. du Pont de Nemours & Co.*, 351 U.S. 377, 395 (1956) ("Cellophane").

⁶ *Brown Shoe*, 370 U.S. at 325. Similarly, the Commission seeks "to define a product or group of products sufficiently distinct that buyers could not defeat an attempted exercise of market power on the part of sellers of those products by shifting purchases to still different products." *Hospital Corporation of America*, 106 FTC 361, 464 (1985), *aff'd*, 807 F.2d 1381 (7th Cir. 1986), *cert. denied*, 481 U.S. 1038 (1987).

of and the participants in a relevant antitrust market, in which customers potentially are exposed to anticompetitive harm.

2. The All-Glass-Container Market

Applying these principles to the case at hand, we conclude that respondents are correct in arguing that an all-glass-container market is not supported by the evidence. Demand-side substitution prevents assertion of such a market. The critical fact here is not contested: complaint counsel concede that an across-the-board price increase by glass container producers could not be sustained because of the ability of consumers to switch their purchases to alternative packaging materials such as plastic and metal. Thus they state, "Complaint counsel agree that not every end-use is inelastic, and that glass producers could not anticompetitively raise prices across-the-board." CAB 10 (emphasis in original)⁷ This concession is fatal to an all-glass container market. If price cannot be raised and consumers cannot be harmed because of the ability of enough customers to defeat the price increase by taking their business elsewhere, the grouping of all glass containers is not a relevant product market.

⁷ The transcript of the administrative trial includes the following interchange between counsel for respondents and Dr. Steven R. Nelson, complaint counsel's expert economist:

Q. And you're also agreed, aren't you, sir, that it would be impossible for this collusion, or cartel of glass container producers to exercise market power by imposing an across the board increase in the prices of all glass containers.

A. Correct.

Q. And that's because a large number of glass container customers have substitutes for glass containers, as we discussed earlier this morning. Is that correct?

A. Correct.

Q. And these customers would defeat such an attempt at across the board price increase by switching to these substitute containers. Isn't that right?

A. Correct.

Nelson, Tr. 2974-75. Dr. Nelson goes on to identify brewers and some soft drink bottlers as customers who could help to defeat supracompetitive prices and concludes that in a market composed of all rigid containers, Owens' acquisition of Brockway poses no competitive concerns. *Id.* at 2975-76.

3. The End-Use Segment Markets

In contrast, respondents' additional claim, that as a matter of theory no grouping of sales based on particular end-uses of glass containers can constitute a relevant product market, lacks merit.⁸ Respondents present three bases for their claim: they argue that the initial decision's treatment as markets of the supply of glass containers to the allegedly inelastic end-use segments is premised on a discredited "submarket" theory; (2) they contend that a market cannot be defined by the current preferences of a small minority of customers when manufacturers compete in a broader market for the majority of their sales; and (3) they claim that the undisputed potential for supply-side substitution from elastic end-uses precludes treating the inelastic end-use segments as relevant "submarkets" (or, to apply the better usage, as relevant markets).

a. *Submarkets*

The contention that the initial decision's handling of the nine allegedly inelastic end-use segments rests on a discredited theory of submarkets misses a fundamental point: if in fact price could be raised above competitive levels for the glass containers sold in these end-use segments, those segments would be proper topics of antitrust concern not because they are submarkets, but because they would be relevant product markets in their own right. At least in theory, each end-use segment could stand as a grouping of sales for which a hypothetical monopolist might be able to impose a significant price increase.

This is precisely the reasoning adopted by the Merger Guidelines. Paragraph 2.11 of the Guidelines sets forth a procedure which (1) starts with each product "narrowly defined" produced by each merging firm; (2) asks whether a hypothetical monopolist could

⁸ To the extent that the District Court opinion which denied a preliminary injunction in this case might suggest otherwise, we note that the court itself recognized its ruling as only a preliminary assessment," *Owens-Illinois*, 681 F. Supp. at 33, quoting *FTC v. Warner Communications, Inc.*, 742 F.2d 1156, 1162 (9th Cir. 1984), and acknowledged that the evidence and arguments had not been reviewed in detail. *Id.* at 54.

successfully impose a small but significant and nontransitory increase in price; and (3) progressively broadens the market by adding the nearest substitute products up to the point that a grouping susceptible to such a price increase is first reached. Thus, the Guidelines suggest that we should "consider the relevant product market to be the smallest group of products that satisfies this test." *Id.* (emphasis added).

This makes analytical sense. To the extent that "submarkets" in fact accurately delineate relevant antitrust product markets, they should be treated as markets. Focusing attention on larger groupings which contain the submarkets merely sows unnecessary confusion. As Professor Areeda's treatise explains:

[T]alk of markets and submarkets is both superfluous and confusing in an antitrust case, where the courts correctly search for a relevant market, that is, a market relevant to the legal issue before the court....

When, for example, we appraise a merger between two producers of "high quality men's shoes" (HQMS), the relevant question is whether a hypothetical union of all producers of HQMS would possess significant power over price. If so, HQMS is a relevant market. If that is the case, it would be altogether irrelevant that a hypothetical union of all shoe producers would have power over shoe prices.

Areeda, ¶ 518.lc at 463-64 (1990 Supp.).⁹ Professor Areeda concludes, "[N]othing would be lost by deleting the word 'submarket' from the antitrust lexicon." *Id.* at 466.

⁹ Emphasizing the reverse effects, where the market, but not the alleged submarket, satisfies demand-side and supply-side substitution tests, then Professor Richard A. Posner, now an appellate judge, concludes:

The "submarket" approach is unsound. If the "outer boundaries" of the market include only the product's good substitutes in both consumption and production, which seems a fair reading of Brown Shoe's reformulation of the cellophane test, then a submarket would be a group of sellers from which sellers of good substitutes in consumption or production had been excluded, and these exclusions would deprive any market-share statistics of their economic significance.

Respondents acknowledge that "[a] 'submarket' is defined by the same economic standard which defines a market...." RAB 18. As the United States Court of Appeals for the Eighth Circuit recently explained, "[T]he same proof which establishes the existence of a relevant product market also shows (or in this case, fails to show) the existence of a product submarket." *H.J., Inc.*, 867 F.2d at 1540. See *Rothery Storage & Van Co. v. Atlas Van Lines, Inc.*, 792 F.2d 210, 218-19 (D.C. Cir. 1986), *cert. denied*, 479 U.S. 1033 (1987) (treating submarket indicia as "proxies for cross-elasticities...in predicting a firm's ability to restrict output and hence to harm consumers"). This, however, in no way suggests that anticompetitive effects within the smaller unit should be ignored. To the contrary, if an end-use segment within the larger grouping of all glass containers meets "the same economic standard which defines a market," the end-use segment may properly be analyzed as a product market in its own right.

Thus, if a hypothetical monopolist could impose a small but significant and nontransitory price increase on the supply of, say, wine bottles, we have identified a grouping of sales and consumers that are exposed to anticompetitive harm, *i.e.*, we have delineated a product market. There is no analytical reason why the antitrust laws should afford wine producers less protection from supracompetitive prices than any other grouping of customers. The fact that wine bottles may be a subset of a larger category of goods consisting of all glass bottles or all rigid containers is simply irrelevant to the ability of a hypothetical monopolist to inflict anticompetitive damage on the market for the supply of wine bottles.

b. *Demand-Side Contentions*

Respondents' next claim, that a market cannot be defined by the preferences of a small minority of customers when manufacturers compete in a broader market for the majority of their sales, adds the thought that a market cannot be predicated on the preferences of infra-marginal consumers, *i.e.*, those consumers whose purchases would be unaffected by a small but significant and nontransitory price increase. This is true, but not determinative. The proper question is whether enough customers within an end-use segment

selectively subjected to anticompetitive prices would substitute alternative products to make the hypothesized small but significant price increase unprofitable. If the proportion of customers at the margin is sufficiently small, a supracompetitive price increase can be sustained.

The testimony of major customers who state that they would not switch to alternative products if faced with a price increase for glass containers is relevant evidence for predicting the likely consumer response to a hypothetical monopolist's small but significant price increase. See FTC Statement *supra* note 4, at 20,905 (treating "the preference of a number of purchasers who traditionally use only a particular kind of product for a distinct use" as evidence of distinct product markets). Respondents had every opportunity to provide countervailing evidence indicating that other customers within the allegedly inelastic end-use segments would switch to non-glass alternatives. The mere fact that the initial decision and complaint counsel have relied on such evidence as is of record does not indicate error.

Nothing in the case law suggests that markets cannot be defined on the basis of inelastic demand in end-use segments within a larger grouping of goods as to which suppliers compete. To the contrary, in *United States v. Connecticut National Bank*, 418 U.S. 656 (1973), the Supreme Court defined a "commercial banking" product market notwithstanding the fact that savings banks and commercial banks were fierce competitors "to the degree that they offer identical or essentially fungible services." *Id.* at 662. The Court reasoned:

From the vantage point of at least one significant consumer of bank services, the commercial enterprise, commercial banks in Connecticut offer a "cluster of products and services" that their savings bank counterparts do not. The facts of this case indicate that the differences in what commercial banks in the State can offer to that important category of bank customers are sufficient to establish commercial banking as a distinct line of commerce.

Id. at 664. Similarly, in *United States v. Grinnell Corp.*, 384 U.S. 563, 574 (1966), the Court found a product market consisting of accredited central station protection services despite the presence of alternative forms of protection because "the high degree of differentiation between central station protection and the other forms

means that for many customers, only central station protection will do."

The lower courts have not hesitated to delineate product markets consisting of inelastic end-use segments within a broader range of competition among the suppliers. For example, in *United States v. Household Finance Corp.*, 602 F.2d 1255 (7th Cir. 1979), *cert. denied*, 444 U.S. 1044 (1980), the court held the lending services of finance companies to higher-risk customers to constitute a distinct product market notwithstanding the fact that "banks and other financial institutions compete with finance companies in the provision of other services." *Id.* at 1259. "[I]n determining the effect of competition in mergers of one type of institution, it is the effect in any area of unique services that must be considered." *Id.* The United States Court of Appeals for the Third Circuit made much the same point in *Columbia Metal Culvert Co. v. Kaiser Aluminum & Chemical Corp.*, 579 F.2d 20, 30 (3d Cir.), *cert. denied*, 439 U.S. 876 (1978): "[T]he existence of competition between two product lines does not alone preclude market power within each line, if each product has a cadre of customers in which it enjoys a decisive advantage."

None of the cases cited by respondents establishes their claim. Although the Supreme Court's *Cellophane* decision found the relevant market to encompass all flexible packaging materials, it first determined that cellophane "has to meet competition from other materials in every one of its uses." 351 U.S. at 399. This leaves unresolved the issue of market definition when price in certain end-use segments is not constrained by intermaterial competition. Respondents also cite the Court's delineation of a combined glass container/metal can market in evaluating a merger between a metal can producer and a glass container producer. *United States v. Continental Can Co.*, 378 U.S. 441 (1964). However, the Court twice suggested that in evaluating the likely competitive effects of different combinations, narrower markets might be appropriate:

Glass and metal containers were recognized to be two separate lines of commerce. But given the area of effective competition between these lines, there is necessarily implied one or more other lines of commerce embracing both industries....the

purpose of delineating a line of commerce is to provide an adequate basis for measuring the effects of a given acquisition....

That there may be a broader product market made up of metal, glass and other competing containers does not necessarily negative the existence of submarkets of cans, glass, plastic or cans and glass together....

Id. at 456-58. As two leading commentators now seated on the federal appellate bench have opined:

[I]f the merger had been between two manufacturers of cans (or of bottles), the Court would surely have held that cans (or bottles) were an appropriate "submarket" in which to appraise the effects of the merger.

R. Posner and F. Easterbrook, *Antitrust Cases, Economic Notes and Other Materials* 366-67 (2d ed. 1981). Again, respondents' claim that designation of narrow markets within broader areas of competition is inappropriate is not supported.

c. Supply-Side Contentions

Respondents' final theoretical objection to product market designations based on inelastic end-use segments is entirely misplaced. Respondents argue that because all producers of glass containers can readily shift production of their existing facilities into manufacturing glass containers for any end-use segment, any attempt to raise price by suppliers of glass containers for the allegedly inelastic end-use segments would be defeated by supply-side substitution. Hence, respondents conclude those segments cannot be product markets.

Respondents' facts are correct, but their conclusion is wrong. The initial decision finds:

With some limitation, switching from one type or size of glass container to another can be accomplished by changing the molds, so different containers can be produced on each machine. Changing from one type of container takes five to eight hours.

IDF 263 (citations omitted). Complaint counsel acknowledge that "[t]here is production flexibility among the leading glass container producers." CAB 31. The ability of glass container producers out-

side an end-use segment to shift production into that segment would constrain the ability of current producers to raise price.

However, this does not mean that the end-use segments cannot constitute markets. Rather, the presence of supply-side substitutability means only that if an end-use segment otherwise qualifies as a market, we should evaluate concentration and likely competitive effects by treating as participants in the market producers that are both (1) easily and economically able and (2) likely to shift production into the market in response to a small but significant price increase. *See* Merger Guidelines, ¶¶ 2.21, 2.4. In essence, the scope of the market is defined on the basis of demand-side substitution. The participants in that market are identified on the basis of supply-side substitution. *See* Merger Guidelines ¶ 2.21 ("If a firm has existing productive and distributive facilities that could easily and economically be used to produce and sell the relevant product within one year in response to a 'small but significant and nontransitory' increase in price, the Department will include that firm in the market") (emphasis added).¹⁰

This methodology matches the grouping of buyers who are exposed by their demand patterns to supracompetitive pricing with the set of sellers who are both readily able and likely to produce the pertinent output. It permits the Commission to evaluate whether, notwithstanding the supply-side substitutability, the merger or acquisition is likely to result in anticompetitive harm to consumers. In contrast, respondents would truncate the inquiry, dismissing the case for absence of a product market despite the presence of a grouping of sales in which customers may be exposed to anticompetitive harm even with supply-side substitution.

In sum, respondents have identified no theoretical reason why the allegedly inelastic end-use segments cannot stand as relevant product markets. We turn, therefore, to the distinct issues of whether the nine end-use segments qualify as product markets under the factual record.

¹⁰ Consequently, when we measure concentration levels in those end-use segments which are determined to be product markets, all glass container producers are included in the calculations. *See infra* Section III.

B. *Product Market: Factual Considerations*

1. Shelf-Stable Juices

The initial decision's own findings undermine its conclusion that shelf-stable juices constitute a product market. It finds that shelf-stable juice is presently sold in cans, plastic containers and aseptic containers in addition to glass. IDF 165. More specifically, the initial decision states, "About 47% of retail sales of shelf-stable juice is in non-glass containers." *Id.*

The record suggests that existing competition from non-glass materials is substantial. Complaint counsel's expert witness conceded that large, 64-ounce sizes must be excluded from the claimed inelastic segment. Nelson, Tr. 3215-16. Indeed, customer testimony reveals existing, direct competition at the 64-ounce size between glass and PET plastic (Bourque, Tr. 2067, 2133-34 (regarding Gatorade and Ocean Spray)), and an Owens witness testified that this competition has taken away sales from glass. Bachey, Tr. 3330-31. Because 23% of total gallonage is packaged in 64-ounce glass containers, which admittedly are subject to intermaterial competition, and 47% of total gallonage is packaged in non-glass containers, only 30% of shelf-stable juice gallonage (representing 18% of the units) is purchased by customers alleged to lack ready substitutes for glass. *Id.* at 3329-30.

Complaint counsel argue that the intermaterial competition acknowledged at the 64-ounce size is inapplicable to smaller sizes because of a variety of factors such as shelf-life and costs. Yet the record shows substantial competition from aseptic paper packaging for single-serve sizes.¹¹ Thus Ocean Spray uses aseptic paper packaging for 8.5-ounce juices (Bourque, Tr. 2062), and a Borden Company witness testified that it had replaced a 10-ounce glass container with an 8-9 ounce aseptic cardboard foil container. Willers, Tr. 1777-78. Although complaint counsel describe the single-serve aseptic packages as a mere "'niche' for children's lunch boxes," CAB 24 n.17, the record shows additional competition from aseptic paper

¹¹ Rather than being hot-filled, juices packaged in aseptic containers are cooled and filled in a sterile environment.

packaging in the one-liter (approximately 32-ounce) size. Bourque, Tr. 2106. More importantly, the record reveals very significant competition from metal cans in both small and mid-range sizes. Beatrice/Hunt-Wesson (Stollsteimer, Tr. 4323), Welch (Bourque, Tr. 2103), Libby (*Id.*), and Del Monte (*Id.* at 2104) all sell shelf-stable juice packaged in 46-ounce cans. In addition, Welch packages in 5-1/2-ounce and 12-ounce cans (Rembert, Tr. 147), and Beatrice/Hunt-Wesson packages in 5-1/4-ounce and 15-ounce cans. Stollsteimer, Tr. 4323.

Moreover, competition from non-glass materials is expected to continue to grow. A witness from Johnson Controls, the nation's principal supplier of PET containers, termed the juice market "[o]ur primary sales target," and "our first and foremost target." Zabinko, Tr. 5363, 5388, 5391. Sales of 32-ounce plastic containers to a specified customer were forecasted (*Id.* at 5395), and the PET manufacturer testified that it was in the process of developing 16-ounce containers for two other identified juice customers. *Id.*

Overall, the record regarding shelf-stable juices reveals substantial existing competition among glass, plastic, metal, and aseptic paper containers with recent conversions away from glass and the likelihood of continued extension of PET competition. In view of these facts, it appears unlikely that a small but significant and nontransitory price increase could be sustained, and we conclude that a product market for the supply of glass containers for shelf-stable juices has not been established.

2. Distilled Spirits

Again, the initial decision's own findings contradict its conclusion that the supply of glass containers for use in bottling distilled spirits constitutes a product market. It finds, "There has been a steady loss of the market to plastic bottles." IDF 215.

Distilled spirits are produced in the United States in a variety of sizes: 50 ml. (9%); 200 ml. (23%); 375/500 ml. (11%); 750 ml. (22%); 1 liter (21%); and 1.75 liter (14%). IDF 217. The 50-ml. size was converted to plastic in 1983, reflecting a desire of the airlines and buyers of "traveler" packages for reduced weight. IDF 218.

In October 1986, Owens estimated that 20% of the 1.75-liter size was being bottled in plastic and projected that 80% would be converted to PET by 1991. IDF 219. By 1988, Seagram already had 85-90% of its 1.75-liter size in PET. Smith, Tr. 1969-70.

Despite this acknowledged competition from 50-ml. and 1.75-liter PET containers, complaint counsel argue that distilled spirits remain an inelastic end-use segment because of an absence of intermaterial competition in the mid-range sizes. The initial decision, however, finds, "There is no technical reason why distilled liquors could not be packaged in plastic in all sizes." IDF 221. Complaint counsel argue that PET containers would not be adequate substitutes in the mid-ranges because liquor producers "require containers that convey a quality image. CAB 26. Complaint counsel do not explain why only glass conveys a quality image in the mid-range sizes, when PET is deemed acceptable for smaller and larger sizes.

The record shows that distilled spirits producers are using or actively evaluating alternatives to glass for the mid-range sizes. Liquor producers McCormick, National Distillers, Hood River, Heaven Hill, Old Crow, and Virginia Gentlemen's are using plastic in 750-ml. and 1-liter sizes. Smith, Tr. 1980. Johnny Walker sells a 375-ml. package in PET. *Id.* at 1981. Johnson Controls produces PET containers for packing liquor in 200-ml., 375-ml. 750-ml., 1-liter, and 1.75-liter sizes. Zabinko, Tr. 5380-81. Seagram has developed first-phase prototype PET molds for 200 and 375-ml. sizes and, in December 1988, had "within the last several weeks, gotten to the point of authorizing" construction of prototype PET molds for the 750-ml. size. Smith, Tr. 1976, 1979. Owens' September 3, 1987 "Liquor Strategic Plan Worksheet" estimated "PET impact loss" of 10% in the 200-ml. and 375-ml. sizes in 1987, growing to 20% in 1988. CX 334D.

The record as a whole shows substantial existing competition between glass and plastic in the distilled spirits end-use segment, primarily for the largest and smallest sizes but extending also into the mid-range. That record does not support a finding that a small but significant and nontransitory price increase could be sustained in the supply of glass containers for packaging distilled spirits, and we conclude that such a product market has not been established.

3. Spaghetti Sauce

The record regarding glass spaghetti sauce containers is mixed. Here witnesses from two large customers testified that they would not convert their packaging from glass to metal cans or plastic even if the price of glass were to increase by 20%. Jameson, Tr. 795, 797 (Ragu); Jardis, Tr. 1325, 1330 (Classico). They pointed to the lack of clarity and of ready resealability of metal cans and the lack of clarity, oxygen permeability, and collapse under vacuum experienced with plastic (Jameson, Tr. 795-96) and asserted that metal and plastic containers would not appeal to consumers. Jardis, Tr. 1325, 1327.

However, the record also shows that at least one significant competitor, Hunt's, has recently entered the market with spaghetti sauce packed in a metal can. Hunt's entered in 1987 and by the end of 1988 its canned spaghetti sauce had captured a 4-5% market share. Stollsteimer, Tr. 4317, 4320; CX 2163. The witness from Beatrice/Hunt-Wesson explained that cans were chosen because they minimized costs (Stollsteimer, Tr. 4318); stated that Hunt's spaghetti sauce competes directly with the major brands packaged in glass (*Id.* at 4321); and testified as to Hunt's canned product, "We view it as a success." *Id.* The record further shows that Chef Boyardee, not a major competitor, also packages its spaghetti sauce in cans. Jardis Tr. 1324, Stollsteimer, Tr. 4321. Ragu, which uses only glass for its retail spaghetti sauce sales, uses cans for institutional sales. Jameson, Tr. 817.¹²

We conclude that a market for the supply of glass spaghetti sauce containers has not been proved. The existing presence of a substantial competitor with a well-known brand name and a 4-5% market share shows that metal cans compete with glass in this end-use segment. This market share was achieved in less than two

¹² In addition, the record shows minor usage of plastic containers for spaghetti sauce. Furmano's, holding less than 1% of the market, uses a plastic container. Jameson, Tr. 796. Ragu once tested a similar container and experienced technical problems, wall collapse and improper sealing. *Id.* Ragu is continuing to test plastic containers. *Id.* at 823. A plastic container producer testified that Campbell's (Prego) had indicated a willingness to test plastic containers, but that the molds for such tests had not quite been completed as of February 1989. Zabinko, Tr. 5400-01.

years after entry, and there is no basis in the record for concluding that further conversions to canned sauces should not be expected if glass becomes more costly. To the contrary, Hunt's motivation for using cans was not to reach some limited subset of niche customers who preferred spaghetti sauce packed in cans, but rather to secure a cost advantage over spaghetti sauces packaged in glass in order to compete on the basis of price. Raising the price of glass would only enhance the cost advantage of cans, promoting further transfers of market share to cans. Given the proven ability of metal cans to compete with glass in this end-use segment, we do not believe that a hypothetical monopolist's small but significant and nontransitory price increase limited to glass spaghetti sauce containers would be likely to succeed.

4. Jams and Jellies

The initial decision's findings of fact concerning jams and jellies, IDF 146-56, are well-supported by the record, and we adopt them in their entirety. These findings establish that jams and jellies are hot-packed and that clarity, inertness, impermeability and resealability are important attributes for their containers. IDF 146-50. They find that metal cans are not acceptable for packaging jams and jellies. IDF 147. They determine that there are no clear, wide-mouth hot-fillable plastic containers commercially available in the United States that would meet the requirements for jams and jellies. IDF 151. They note that Welch packages some jelly in a squeezable plastic container which suffers cost, clarity, and functional disadvantages relative to glass containers. IDF 152-55. They observe that Welch's sales in the squeezable plastic package have declined by 50%, and that other jelly producers which introduced plastic containers withdrew them. IDF 155.¹³ They conclude that Welch

¹³ Although the General Manager of Owens' plastics and closures business testified that Smucker produced a plastic container for strawberry jam, he did not know if that container continued to be sold in the United States. Trumball, Tr. 4116-19. However, the Senior Vice President of Operations of Welch Foods testified that Smucker and Kraft had discontinued packaging jams and jellies in squeezable containers. Rembert, Tr. 141. The General Manager of Borden's Fruit Products Group stated his belief that Smucker had discontinued a test of a squeezable plastic container. Willers, Tr. 1708.

would not shift more of its jams and jellies into this plastic container if the price of glass were to increase by 5-10%. IDF 156.

To these findings we add the following. Welch sells approximately 4.7 million cases of jams and jellies annually, of which 700,000 are in plastic. Rembert, Tr. 132. Welch's sales represent about 13-14% of United States jam and jelly sales. *Id.* at 133. Based on Welch's estimates, its plastic containers represent only approximately 2% of total jam and jelly sales. (A Borden witness estimated Welch's plastic container share "as we sit here today" at less than 1%. Willers, Tr. 1707.) Welch must use a different formulation for the jam and jelly that it packages in plastic. Rembert, Tr. 135-36. Welch regards its squeezable plastic container as serving a "niche market" which "satisfies the need of a small portion of the public." *Id.* at 137. When it first started packaging in plastic, Welch projected its potential market as 700,000 cases, which is what it has attained. *Id.* at 247.

An Owens document which projected market opportunities five years forward from 1984 showed "Jams, jellies - 100%" and added, "Major producers have experimented with a number of resins but so far, none are acceptable. Clarity is very important, therefore, don't expect significant inroads soon." CX 1007G. This view was confirmed in the February 1989 testimony of one of respondents' own witnesses, the Johnson Controls executive in charge of non-soft-drink plastic container development. He indicated that jams/jellies was the last of Johnson Controls' targets in order of priority (Zabinko, Tr. 5391), noted that there was an "unclear barrier need there," *id.*, and affirmed that Johnson Controls was "not working specifically on anything for jams and jellies." *Id.* at 5447.

From these facts we conclude that the supply of glass jam and jelly jars constitutes a relevant product market. Present competition between glass and alternative materials is minimal, with only 1-2% of the market going to non-glass containers for niche uses. Plastic has significant disadvantages relative to glass, and its usage is declining, with major jam and jelly producers abandoning plastic and Welch's plastic sales half of former levels. The record suggests that plastic producers are not devoting significant current efforts to penetrating this market. The only current user of plastic containers in the market states that it would not increase usage if the price of

glass were to rise by 5-10%. It therefore appears probable that a small but significant and nontransitory price increase by a hypothetical monopolist could be sustained.

5. Mayonnaise

The initial decision's findings of fact concerning mayonnaise are generally well-supported by the record, and we adopt IDF 185-189, 191-92, and 195-97. The adopted findings establish that clarity, resealability, impermeability and quality image are important attributes provided by glass containers. IDF 185-89. They determine that metal cans would not be acceptable substitutes for glass mayonnaise containers even if the price of the latter were to increase by 5-10%. IDF 191. They find that plastic containers have been used in the institutional trade. IDF 192.¹⁴ They note that a small regional mayonnaise producer called "Saffola" uses plastic packaging, but has experienced technical problems. IDF 196. They determine that although Kraft markets some mayonnaise in a squeezable plastic container, that package has not been successful and had dropped to a .7% market share by the end of 1986. IDF 197.¹⁵ IDF 195 notes that the cost of converting to plastic would be substantial and concludes that if the price of glass containers were to increase by 5 to 10 percent, major producers of mayonnaise would not switch to plastic.

¹⁴ These are 128-ounce plastic containers sold primarily to institutional buyers such as food services. Mitchell, Tr. 655. Because plastic is a viable substitute for glass in the institutional trade, our findings as to the product market are limited to the smaller sizes sold in the non-institutional, "retail" trade.

¹⁵ A Brockway document entitled "Food Market, 3 Year Plan," corrected and reprinted on March 20, 1987, elaborates:

To date the squeeze bottle has met with only limited success in the market since it is satisfying only a niche portion. We expect the glass jar to continue to be the dominant container type used for mayonnaises, primarily due to barrier requirements and clarity. We do not anticipate the high barrier plastics squeeze bottle to gain significant market share in this segment.

Respondents argue that clear plastic containers have been developed which solve the shelf life and technical requirements of mayonnaise packaging. Witnesses from both of the major mayonnaise producers (CPC International, producer of Hellmann's and Best Foods brands, and Kraft) testified that this was so. Mitchell, Tr. 711; Erwin, Tr. 5173. Respondents claim that Kraft has already scheduled conversion of its mayonnaise to plastic packaging. However, the underlying facts cut against respondents. Kraft has scheduled conversion of only its 48-ounce mayonnaise container (Erwin, Tr. 5113, 5119, 5172),¹⁶ and sales in the 48-ounce size are trivial compared to those in smaller sizes.¹⁷ Moreover, conversion to plastic of smaller sizes appears less likely because the relative economics of glass and plastic tend to favor glass as size is reduced. Erwin, Tr. 5110. The same study which Kraft relied upon in determining to convert the 48-ounce size reveals that conversion of 32-ounce sizes would not be economically justified. RX 148C.¹⁸ In fact, using the Kraft study's numbers and assuming (1) the cost of plastic resin falls to historical levels and (2) the cost of glass containers rises 5-10%, conversion of 32-ounce mayonnaise containers from glass to plastic still would not be cost-justified.¹⁹

¹⁶ Indeed, the record suggests that Hellmann's is also considering conversion of its 48-ounce size to plastic. Zabinko, Tr. 5398.

¹⁷ Kraft buys 7 million units in the 48-ounce size compared to 220 million units in the 32-ounce size. Erwin, Tr. 5112. CPC's conversion of 48-ounce containers apparently would involve only 10 million units. Zabinko, Tr. 5398. Brockway estimated total mayonnaise container sales in 1986 at nearly 922 million units. CX226D.

¹⁸ From an economic perspective, conversion to plastic would make "even less sense" for still smaller sizes. Erwin, Tr. 5113.

¹⁹ Increasing the price of 32-ounce glass containers by 10% from the 10.8-cent mid-range level used by the Kraft study yields 11.9 cents. Decreasing the price of plastic containers by the 5% found appropriate by Kraft to adjust for the then current excess of resin prices over historical levels reduces plastic container prices to 14.8 cents. After deducting 2 cents to reflect the distributional savings attributed by Kraft to plastic, we still find the cost of 32-ounce plastic containers nearly 1 cent above the cost of glass containers.

Consequently, the record indicates that for all but trivial portions of the retail mayonnaise trade, *i.e.*, for all but 48-ounce sizes, a hypothetical monopolist would not be constrained from imposing a small but significant and nontransitory price increase by the presence of alternative packaging materials. Kraft's documentary evidence is confirmed by the testimony of customer witnesses. Mitchell, Tr. 668-69 (testifying on behalf of CPC that a 5-10% increase in the price of glass containers "would not close the economic gap between glass and plastic"); Clements, Tr. 759; Willers, Tr. 1698. We conclude that the supply of glass containers for retail sales of mayonnaise is a relevant product market.

6. Pickles

The initial decision's findings of fact concerning pickles are fully supported by the record, and we adopt IDF 157-163 and, with the minor correction noted in n. 22, *infra*, IDF 164. The adopted findings establish that, for pickle jars, clarity, impermeability, resealability, and the capacity to withstand high temperature packing are important physical attributes of glass, and conclude that there presently is no clear, wide-mouth plastic container that is an economically feasible alternative for packaging retail sizes of hot-packed pickles.

Alternatives to glass face both technological and economic handicaps. Fresh-pack pickles are pasteurized and must be hot-filled. Faulkner, Tr. 1260, 1262. They require a container sufficiently impermeable to sustain a shelf-life of 18-24 months. *Id.* at 1261. Respondents point to testimony which indicates that clear, wide-mouthed, hot-fillable plastic jars suitable for holding pickles have been developed (Trumball, Tr. 4171; Gigliotti, Tr. 5692), but none of their witnesses contends that such plastic containers represent economically viable competition for glass.²⁰ In contrast, complaint

²⁰ Even as to the technological ability of plastic to substitute for glass, the cited testimony might be questioned in view of the conflicting deposition testimony of Robert S. Coakley, President of Brockway's Glass Container Division:

Q. So you never lost a pickle customer to plastic then?

A. No, and I really question whether I could.

Q. Why do you question that?

A. Because I don't think that plastic containers, to this day, are capable of handling pickles.

counsel's witness from Cates testified that an Owens design work-up of a suitable plastic pickle container showed that plastic was 60% more expensive than glass. Faulkner, Tr. 1266. As summarized by the witness from Cates, "[T]he pricing makes it [plastic] not a feasible option." *Id.* The remaining alternative, use of metal cans, is rendered unacceptable by metal's absence of clarity. *Id.* at 1270-71.

Refrigerated pickles are not hot-filled, have shorter shelf lives than fresh-pack pickles, and might be more susceptible from a technological standpoint to competition between plastic and glass. A Kraft witness testified that Clausen, a producer of refrigerated pickles, was in the process of "developing the plastic jar." Erwin, Tr. 5022, 5123. The record does not show the stage of Clausen's efforts or whether they met with technological or economic success. At the same time, all facts of record reveal only glass packaging in present use for retail sales of either fresh-pack or refrigerated pickles.²¹ Faulkner, Tr. 1265, 1267; Haworth, Tr. 3895; Zabinko, Tr. 5417.²²

Q. Why is that?

A. I don't think that their oxygen barrier is adequate.

Q. Why is it and how is it different from glass?

A. Glass is impermeable.

CX 23Z78-79.

²¹ The sole exception is for single-serve pickles sold in the delicatessen sections of some supermarkets and wrapped in plastic bags. Faulkner, Tr. 1263; Haworth, Tr. 3895.

²² In contrast, intermaterial competition does appear significant for two groupings of sales whose needs differ from the norm. Pickle relish need not be pasteurized, and a major producer, Heinz, has successfully converted a portion of its pickle relish sales to plastic. IDF 164. (IDF 164's statement that "Heinz's pickle relish is packed in a squeezable plastic container and achieved a 48% share of the market in 1988" is ambiguous. Although Heinz relish achieved a 46% market share (RX 1029G), Heinz continued to package "a lot of relish" in glass. Blecharz, Tr. 4910.) Nor do the advantages of glass appear controlling for sales in large containers to institutional buyers such as restaurants: the clarity needed to appeal to retail buyers is unnecessary, and the faster turnover of institutional sales avoids the taste problems from oxygen permeation that are experienced with plastic packaging in a period less than the shelf-life of retail sales. Faulkner, Tr. 1261, 1270-71, 1304-05. Both cans and plastic appear to compete successfully with glass for these institutional sales. IDF 161; Faulkner, Tr. 1270. We therefore exclude from our product market glass containers for pickle relish and the large glass containers sold for the institutional pickle trade.

In view of the absence of existing intermaterial competition, the dearth of indications that competition from plastic will soon be economically viable, the admission of Brockway's Glass Container Division President that plastic suffers serious technological disadvantages, and the testimony to the effect that Cates would not switch from glass to plastic or metal containers if the price of glass containers were to rise 5-10% (Faulkner, Tr. 1267, 1271), we conclude that the supply of glass containers for retail sales of pickles is a relevant product market.

7. Wine Coolers

The record supports a finding that the supply of glass containers for single-serve wine coolers is a relevant market. Wine coolers are usually sold in 12-ounce single-serve glass bottles. Smith, Tr. 1931 (Seagram uses 12-ounce glass packaging exclusively); CX 335D; CX 1022Z78. Quality image and impermeability contribute to that choice of packaging. Smith, Tr. 1931.

Because of adverse consumer image, metal cans are not a significant alternative to glass bottles for wine coolers. Sales in cans have been attempted but have not achieved significant shares. *Id.* at 1932. Seagram test-marketed wine coolers in cans. The results were "disastrous" with marketing acceptance "somewhere between slim and none." *Id.* at 1932-33.

Plastic containers are not a significant alternative to glass for single-serve wine coolers because of image and shelf-life problems. *See* CX 23Z93, deposition testimony of Robert S. Coakley, President of Brockway's Glass Container Division (conceding that he had never seen plastic containers for wine coolers in 12-ounce serving sizes). Seagram tested a two-liter plastic container and found shelf-life inadequate. Smith, Tr. 1934. For sizes smaller than two liters the threat to shelf-life posed by permeation problems is exacerbated because the ratio of surface area to volume increases as volume decreases. *Id.*

Documentary evidence confirms that plastic is not a likely substitute for glass in packaging single-serve wine coolers. A February 1987 presentation by respondents' consultant, Mr. Joseph Cavanagh, stated:

There is little chance that plastic will invade the wine market, or even the wine cooler market, except for bottles supplied to the airlines. Plastics never presented a serious threat to the varietal segment, and failed trying to invade the low cost jug wine segment because of poor product retention on storage. It is unlikely therefore, that plastics will succeed in invading the single service wine cooler market.

CX 90R. An October 1986 Owens presentation on the wine cooler market observes:

Some companies, primarily Sun Country, are marketing a larger 2-liter PET, but this really defeats the single-service/convenience purpose of the package. And the 12-ounce aluminum can has minimal use. Cans just are not consistent with the product image and cannot approach the consumer preference for glass. For now, it appears that any other packaging material, PET, aluminum, or even aseptics, offers little or no threat to the position glass has assumed, but we don't want to take that commanding lead for granted.

CX 1022Z79.

Nonetheless, in sizes larger than single-serve, particularly in the two liter size, PET packaging has made inroads. Owens attributed as much as 15% of total 1986 wine cooler gallonage to the two-liter PET bottle and projected a 20% share for 1988. CX 63A. *Cf.* CX 49H (1986 Owens document attributing 7% market share to PET). The two-liter sizes may serve a niche market.²³ In any case, as shown above, plastic is unlikely to be a viable alternative to glass in single-serve sizes in the foreseeable future. *See* CX 328H (April 15, 1987 Owens document stating, "Glass will remain the dominant package with some 2 liter PET").

We conclude that competition from alternative packaging materials would be unlikely to preclude a hypothetical monopolist from imposing a small but significant and nontransitory price increase on glass containers for single-serve wine coolers. Because buyers of glass containers in this primary portion of the wine-cooler

²³ One Owens document explains that the two-liter wine coolers packaged in PET are "popular for outdoor events." CX 335D. Another refers to a customer's determination that "glass is a concern at beach locations, pool locations, etc., and, therefore, they need a competitive material to reach those particular market areas." CX 932Z106.

market lack adequate substitutes to avoid anticompetitive harm, we conclude that the supply of glass containers for single-serve wine coolers is a relevant market.

8. Wine

The initial decision's findings of fact concerning wine are generally well-supported by the record and we adopt IDF 198-205 and 207-09. With only one exception,²⁴ respondents have not challenged the adopted findings. Unchallenged findings include:

IDF 199: "There are no commercially viable substitutes for glass for premium wines."²⁵

IDF 200: "Metal cans are not acceptable substitutes for wine. If the price of glass wine bottles were to increase by 10%, it is unlikely that wineries would switch to cans."

IDF 202: "Plastic is not an acceptable substitute for glass for premium wine because glass has a 'premium' image and because of oxidation problems."

IDF 204: "It is unlikely that wineries would switch to plastic if the price of glass were to increase by 10%."

IDF 207: Bag-in-the-box containers "are not an acceptable substitute for premium wines because of quality considerations."

IDF 208: "Respondents do not view other containers as a threat to glass in the wine market due to image, shelf-life, and consumer preference."

Respondents argue that the initial decision excludes wines sold by airlines and jug wines and add the unquantified claim that glass is being displaced by plastic and bag-in-the-box containers. These are largely two statements of the same points because such intermaterial competition as does exist is concentrated in the airline and jug wine sectors. The airline container sales are a niche use by definition. The

²⁴ IDF 209, challenged by respondents, relates only to the relative profitability of wine to Owens and to Owens' pricing strategy for "jug" wines in very large bottles. These issues are not essential to our analysis.

²⁵ The initial decision defines a premium wine as one obtaining 75-100% of its juice from a specific "high-end" varietal grape, as distinguished from a jug wine, which is produced by blending various grape varietals such as green grapes found in grocery stores. IDF 201 n.10.

jug wine business accounts for only 3.2% of glass wine container units. CX 316Z4.²⁶

Nothing cited by respondents suggests that enough producers of premium wine would shift to non-glass alternatives to defeat a small but significant price increase on glass containers. Indeed, the record is replete with respondents own documents indicating that premium wine producers have no viable alternatives to glass. *See* IDF 199, 205, 208. Consequently, we conclude that the supply of glass containers for premium wine is a relevant product market.

9. Baby Food and Baby Juice

The initial decision determines that the supply of glass containers for baby food and baby juice is a relevant market. After reviewing the record in detail, we have concluded that non-glass alternatives present substantial competition for packaging baby juice but not baby foods, and we define the supply of glass containers for processed baby food as a relevant market.²⁷

Fifty percent of processed baby food is retorted, *i.e.*, cooked at high temperature in its container. IDF 110. Clarity is important for consumer acceptance. IDF 107. Metal cans are not clear, and plastic that is resistant to distortion at high temperatures is not clear, lacks screw-top resealability, and is not economically viable competition for glass. IDF 117; Zoon, Tr. 55; Rottman, Tr. 933; Blecharz, Tr. 4877. The record supports the initial decision's finding that there is no clear plastic container commercially available today that could be used for retorted baby foods. IDF 117.

Witnesses from both Beech-Nut and Gerber testified that their companies package processed baby food only in glass (Jones, Tr. 505; Rottman, Tr. 907) and would have no interest in converting to plastic just the 50% of processed baby food which could be hot-filled as opposed to being retorted. They feared adverse consumer reaction

²⁶ Bag-in-the-box containers are used primarily for institutional sales and are declining in importance. CX 316Z4; CX 922Q; CX 928B; CX 1022Z89.

²⁷ The reference to "processed" foods is meant to exclude dry products such as cereals.

to the appearance of mixed glass and plastic packaging within their processed baby-food line (Jones, Tr. 526; Rottman, Tr. 989) and noted that such a mixture would cause production difficulties. Jones, Tr. 526-27. Both witnesses stated that their companies would not shift to alternative packaging materials for processed baby food in response to a 5-10% increase in the price of glass containers. Jones, Tr. 521, 523, 529; Rottman, Tr. 934.

We find that the record amply supports treating the supply of glass containers for packaging processed baby food as a relevant product market.

In contrast, product market status for glass baby juice bottles appears unwarranted. Baby juice is hot-filled, so there is no need for retorting. Jones, Tr. 530. This leaves no technological barrier to using plastic, and plastic baby juice bottles have made major and rapid inroads. Heinz, one of three principal baby juice producers, introduced a 25.3-ounce plastic baby juice container in 1988. Within six months the plastic bottle accounted for 50% of Heinz's baby juice gallonage. Blecharz, Tr. 4857, 4939. Gerber offers a competing 750 ml. plastic bottle. Rottman, Tr. 908. In addition, Gerber sells juice in a 4-ounce plastic bottle. This product was introduced approximately two years before the administrative trial (Rottman, Tr. 912; Jones, Tr. 531); it has not been particularly successful (Zoon, Tr. 53; Rottman, Tr. 927), but nonetheless may account for 5% of Gerber's baby juice sales.²⁸ *Id.* at 960. The present competition between glass and plastic is significant and growing and makes it unlikely that a small but significant increase in the price of glass baby juice containers could be sustained.

C. *Geographic Market*

The initial decision defines a geographic market consisting of the continental United States. IDF 277. We agree. The initial decision's findings that glass imports are small in percentage terms, primarily involve small or specialty items such as cosmetic jars (as opposed to

²⁸ Gerber holds approximately a 70% share of the total baby juice market. Rottman, Tr. 961.

the larger sizes generally at issue in the product markets identified above), and suffer severe disadvantages in terms of freight costs, reliability of supply, and, at least in some instances, quality of production, are well founded in the record. IDF 265-69, 271-72, 275.²⁹ Consequently, we find that not enough customers would switch to foreign producers to defeat a small but significant and nontransitory price increase for the glass containers supplied to the product markets delineated above.³⁰ See Merger Guidelines ¶ 2.31.

III. CONCENTRATION LEVELS

"As the number of firms in an industry declines, and industry concentration increases, *ceteris paribus*, it becomes easier for those firms to coordinate their pricing, and the likelihood of anticompetitive effects from an acquisition consequently increases as well." *B. F. Goodrich Co.*, 110 FTC 207, 303 (1988), modified by stipulation, *B. F. Goodrich Co. V. FTC*, No. 88-4065 (2d Cir., April 25, 1989), modified final order issued, 112 FTC 83 (1989). The initial decision provides several alternative computations of concentration for the glass container industry as a whole using the Herfindahl-Hirschmann Index ("HHI"), which the Commission has applied in recent years to measure the structural character of relevant markets. *Id.* at 304. See Merger Guidelines ¶ 3.1. We adopt the findings in Section V.A. of the initial decision which show that (1) measured by furnace capacity the Owens/Brockway acquisition raises HHI by 656 points to 2,237; (2) measured by dollar sales the acquisition raises HHI by 663 points to 2,170; (3) measured by unit sales the acquisition raises HHI by 790 points to 2,304; (4) measured by tonnage production the acquisition raises HHI by 663 points to 2,181; and (5) measured by unit production the acquisition raises HHI by 852 points to 2,478. Under

²⁹ IDF 265 should refer to CX 1451F-G, rather than to CX 1514F-G. The precise figure for the share of total U.S. glass container dollar sales represented by imports is 2.97%. CX 1451F.

³⁰ Although they argue that competition from foreign producers should be considered in evaluating the likelihood that the Owens/Brockway acquisition will have anticompetitive effects, respondents do not appeal the initial decision's definition of geographic market.

each of these calculations, the increase in and level of concentration are well in excess of benchmarks which typically raise significant competitive concern. *See* Merger Guidelines ¶ 3.11(c).

Respondents do not contest the accuracy of the HHI calculations but do challenge their relevance. Respondents argue that it is inappropriate to measure concentration for selected end-use segments by using HHI figures based on market shares for the glass container industry as a whole. However, industry-wide concentration data are relevant because they reflect the number and relative size of the producers whose supply responses are likely to affect price in the inelastic end-use segments. Because of the ease of supply-side substitution, the facilities of each of these producers should be considered part of each of the end-use-segment markets, *see supra* Section II.A.3.c., making concentration within each end-use segment the same as concentration for the glass container industry as a whole.³¹

IV. ENTRY CONSIDERATIONS

A primary consideration in evaluating the likely competitive effects of a merger or acquisition is the ease or difficulty with which new competitors might enter the market in response to supra-competitive pricing. "The absence of barriers or impediments to entry makes it highly unlikely that a merger or acquisition will have anticompetitive effects, because any effort to extract supra-competitive prices and profits will induce new entry, which will reduce prices to competitive levels." *B.F. Goodrich*, 110 FTC at 295-96. In contrast, if prompt, effective entry is unlikely, customers may be exposed to sustained periods of anticompetitive harm.

The initial decision concludes that "[e]ntry into the glass container market is difficult." ID at 81. Respondents do not appeal from that conclusion, and it is amply supported by uncontested factual findings:

³¹ Respondents also suggest that the HHI calculations carry different implications for the likelihood of anticompetitive effects than are normally present. We regard this as affecting the interpretation rather than the relevance of the HHI calculations. *See infra* Section V.

1. There has been no successful entry into glass container production since before 1980. IDF 305.

2. Entry cannot be accomplished quickly. Brockway acknowledged that it would take 24 to 30 months for entry into glass container production, and it took four years for Owens to bring its most recent plant on stream. IDF 306. The magnitude of barriers or impediments to entry may be assessed "in terms of the amount of time required for a motivated outsider to effect entry," *Olin Corp.*, No. 9196, slip op. at 23 (FTC, June 13, 1990), appeal filed, No. 90-70452 (9th Cir., filed Sept. 5, 1990), and the Merger Guidelines use a two-year time frame for determining whether entry will adequately constrain supracompetitive pricing. *Id.* at ¶ 3.3. Entry here would not meet that test.

3. Environmental restrictions have become increasingly stringent in recent years but grandfather existing glass furnaces. IDF 315. These restrictions expose entrants to higher costs than existing firms face (IDF 316-18) and constitute an entry barrier. *See B.F. Goodrich*, 110 FTC at 299.

4. IDF 322 determines that "customers choose suppliers with a proven quality record, which increases the difficulty faced by a new entrant."

5. "The replacement costs of O-I's glass container plants range from \$40 million to \$110 million. Owens acknowledges that the sunk costs associated with 'high capital investment discourages entry'" IDF 309 (citations omitted). *See B.F. Goodrich*, 110 FTC at 300-303; Merger Guidelines ¶ 3.3 n.21.

From just the uncontested portions of the record, we conclude that entry into the production of glass containers is difficult and unlikely to prevent existing competitors from raising price.³²

V. LIKELIHOOD OF ANTICOMPETITIVE EFFECTS

The ultimate goal of analysis under Section 7 of the Clayton Act is to determine whether the effect of an acquisition "may be substantially to lessen competition, or to tend to create a monopoly." 15 U.S.C. 18. Having defined the relevant markets, determined the

³² Although respondents do not appeal the initial decision's conclusions on the entry issue, they do argue that in the event of supracompetitive prices customers would increase reliance on foreign producers. RAB 48. Important factors which convince us to confine the geographic market to the continental United States disadvantages of imports with regard to freight costs, reliability, and quality are unlikely to be affected by the longer time frame in which entry issues are evaluated. Merger Guidelines ¶ 3.3. Those same factors lead us to reject any suggestion that foreign entry would be a significant constraint on the ability of existing competitors to raise prices.

concentration levels, and evaluated the conditions of entry, our remaining task is to assess the likelihood, based on these and other factors, that Owens' acquisition of Brockway will give rise to anticompetitive effects.

It is not claimed that the acquisition will create a dominant firm. Complaint counsel's expert economist expressly disavowed any theory based on the unilateral exercise of market power. *Nelson, Tr.* 2974. Complaint counsel do claim, however, that the acquisition will facilitate the exercise of market power through express or tacit collusion among glass container suppliers. Our task is to determine whether such collusion is probable. *See Brown Shoe*, 370 U.S. at 323 (finding that Congress had proscribed mergers with a probable anticompetitive effect" as opposed to either "certainties" or "ephemeral possibilities"); *Hospital Corp. of America v. FTC*, 807 F.2d 1381, 1389 (7th Cir. 1986), *cert. denied*, 481 U.S. 1038 (1987) (Section 7 analysis requires a "predictive judgment, necessarily probabilistic and judgmental rather than demonstrable" as to whether the transaction creates "an appreciable danger" of future anticompetitive effects), *affirming Hospital Corp. of America*, 106 FTC 361, 499 (1985) (an acquisition is unlawful if anticompetitive effects are "reasonably probable"); *B.F. Goodrich*, 110 FTC at 288.

This case requires evaluation of the probability of collusive or interdependent behavior focused on six inelastic end-use segments within a much larger glass container industry. Certainly, anticompetitive behavior directed at selected groupings of customers is possible and raises legitimate antitrust concerns. We have so noted in the past. *See Hospital Corp of America*, 106 FTC at 499. The real issue, however, is whether such anticompetitive behavior is likely. Based on the totality of circumstances at hand, we conclude that it is not.

Our analysis is colored at the start by the small size of the inelastic segments relative to the aggregate supply of glass containers and by the extraordinary speed with which suppliers of glass containers for elastic end-uses could convert their facilities to produce containers for the inelastic markets. Even rough calculations quickly demonstrate that the six inelastic end-uses constitute less than

15% of the overall glass container industry.³³ The more than 85% of the industry outside the collusive scheme could be shifted into production for the inelastic markets in as little as five to eight hours. IDF 263.

These factors pose a serious impediment to collusion.³⁴ Any collusive scheme focused on the inelastic end-uses would be threatened not just by the normal incentives to cheat which might in some circumstances undermine even across-the-board collusion; it would face in addition the disruptive force of a pool of readily fungible productive capacity far greater in magnitude than any contemplated output reductions, yet presently devoted to elastic

³³ From CX 36D, the Brockway data relied upon by complaint counsel's economic expert in estimating 1986 dollar sales volumes in various end-use segments (Nelson, Tr. 3027-31), we find the following industry-wide sales of glass containers:

baby food and juice	15,278,000 gross
mayonnaise/spoonable dressings	6,424,000 gross
pickles/relish	4,340,000 gross
jams, jellies and preserves	3,368,000 gross

Deletion from these figures of glass containers used for baby juice and relish, items outside our product markets, in proportion to Brockway's sales (CX 37A) leaves the units for baby food alone (11,557,000 gross) and for pickles alone (4,062,000 gross). 1986 industry-wide sales of glass containers for wine and wine coolers are derived from Owens document CX 41G showing 16,891,000 gross under the aggregated heading "wine." Compare CX 328L (Owens document dated 4/15/87 splitting a closely comparable 1986 total for the "wine industry" approximately evenly between traditional wine and wine coolers). Aggregating these data yields a total of 42,302,000 gross for the six inelastic end-use product markets combined. This represents 14.9% of the 283,057,000 gross total 1986 glass container shipments. CX 41G.

The 14.9% estimated share overstates the size of our six product markets to the extent that it fails to deduct for the large sizes of mayonnaise and pickle jars sold to institutional buyers, very large sizes of wine coolers, and jug wines, which we have excluded from our markets because of competition from alternatives to glass packaging.

³⁴ Although urging that collusion is likely, complaint counsel concede that as a "theoretical" matter, collusion is more difficult in the context of price discrimination than in the context of across-the-board price increases. OA Tr. 29-30.

end-uses and therefore not benefiting from the collusive scheme. Producers of glass containers intended for the 85% of the market outside the collusive scheme could increase profits by diverting a portion of their output to the markets charging supracompetitive prices. This incentive to divert output would apply to all producers of containers for elastic uses but would be especially powerful for those producers who do not currently sell to the small portion of the industry that would be covered by the hypothesized collusion. Such producers would gain nothing from supracompetitive prices in the inelastic markets and would have profitable diversion opportunities.³⁵

The smaller the relative size of the inelastic product markets, the more difficult the collusion becomes. As admitted by complaint counsel's economic expert:

We're talking about relative magnitudes here, and it depends on the magnitude of the inelastic end uses. Obviously, the larger the amount of inelastic end uses the more the diversion would have to be to cause it to break down.

Nelson, Tr. 3171.

Our finding that less than 15% of the glass container industry is potentially subject to collusion coupled with the extreme rapidity with which production facilities could be shifted into the inelastic product markets suggests considerable difficulty in making collusion effective. For example, a price increase of 5%, the level generally hypothesized in defining product markets, Merger Guidelines ¶ 2.11, could be defeated by a shift in output of less than 9/10 of one percent

³⁵ Of course, to the extent any further conversions to plastic or other alternative packaging materials free capacity within the elastic group, that capacity could be devoted to the inelastic markets without diversion from elastic uses. Further conversions are in fact contemplated. *See, e.g.*, Erwin, Tr. 5051, 5127, 5173-74 (Kraft will convert 16-ounce salad dressing from glass to plastic); Lankester, Tr. 3990-91, 3994-96 (Procter & Gamble's Folger's instant coffee in plastic is "currently in the process of being rolled out," and Procter & Gamble initiated industry trend toward conversion of peanut butter from glass to plastic during course of this proceeding); Willers, Tr. 1736 (Borden intends to convert a portion of its peanut butter from glass to plastic). Complaint counsel's economic expert has conceded that cost-effective capacity freed up by conversions to plastic is the functional equivalent of new entry. Nelson, Tr. 3188-90.

of the production in the elastic uses.³⁶ Given the small amount of diversion necessary to upset the collusion and the ease with which facilities can be shifted between uses, a collusive scheme would have to be very effective in enlisting the unwavering support of the entire industry in order to succeed.

The record reveals ample additional reasons for questioning whether anticompetitive effects are likely.³⁷

With respect to baby food, we find the market dominated by just three buyers: Gerber holds approximately 70% of the market, with the remaining 30% divided between Beech-Nut (17%) and Heinz (13%). Jones, Tr. 509; Rottman, Tr. 906. As buyer concentration within a product market increases, the benefits from cheating to capture a customer's business increase relative to the magnitude of gains from collusion. *See Hospital Corporation of America*, 807 F.2d at 1391; *B.F. Goodrich*, 110 FTC at 323-24; FTC Statement at 20,903; Merger Guidelines at ¶3.42. Moreover, witnesses from the baby food producers testified to possessing substantial leverage over their glass container suppliers. Thus the witness from Gerber stated that Gerber had induced Owens to move baby food production to a Charlotte, Michigan plant near a Gerber facility; that the Charlotte plant had facilities dedicated to the production of containers for Gerber; and that without Gerber, a substantial part of the Charlotte plant would be without business. Rottman, Tr. 982. (An Owens witness testified that 65% of the Charlotte plant's production goes to

³⁶ Elasticity is defined as the ratio of the percentage change in output to the corresponding percentage change in price. In an inelastic market, that ratio by definition is less than one. For example, in an inelastic market a 5% price increase would be generated by less than a 5% output reduction, or, to state matters in reverse, a 5% price increase would be defeated by something less than a 5% output increase. Thus, a 5% price increase focused on the 15% of glass containers with inelastic demand would be defeated by an output increase of less than 5% of 15%, or .75% of all glass containers. This represents a little under .9% of the 85% share of glass containers produced for elastic uses. *See Nelson*, Tr. 2734; *Peltzman*, Tr. 5975.

³⁷ In assessing the likely competitive effects of an acquisition, the Commission, as in this case, bases its decision upon the totality of the evidence. We do not reach the issue of whether all these reasons were necessary for drawing our conclusion.

Gerber and that if Owens lost Gerber it would have to close the Charlotte factory. Bachey, Tr. 3388, 3393.) The witness from Heinz testified that its massive purchases of elastic items created sufficient leverage to prevent supracompetitive pricing in baby food. Blecharz, Tr. 4881. The Heinz witness also pointed to protections afforded it by a long-term supply contract with Owens, including clauses which specifically tie price increases to cost changes and give Heinz the right to audit Owens' costs. *Id.* at 4871, 4880. Gerber and Heinz, representing 83% of the baby food market both believe that they could defeat a 5-10% price increase, and neither objects to the Owens/Brockway acquisition. Rottman, Tr. 980, 983; Blecharz, 4880-81. The combination of these factors and the difficulty of establishing a selective collusive scheme directed at less than 15% of total glass container purchases leads to the conclusion that anticompetitive behavior in the supply of baby food jars would not be likely.³⁸

With mayonnaise we find some of the same factors identified in the discussion of baby food. The buyers' market is dominated by two principal mayonnaise producers, CPC International, Inc. (producers of Best Foods and Hellmann's mayonnaise) and Kraft, which together account for 70% of mayonnaise production. Mitchell, Tr. 724. These buyers have sophisticated methods for monitoring glass container production costs, thus increasing the likelihood that they would detect any anticompetitive price increases. *See* Erwin, Tr. 5017 ("We [Kraft] feel we have nearly as good an understanding of our suppliers' costs as they do."). Perhaps more fundamentally, selective price discrimination with regard to the supply of glass containers for mayonnaise may be impossible. The major mayonnaise producers use stock containers, suitable for use in a variety of end-use segments. Nelson, Tr. 2996-97; Bachey, Tr. 3399 (CPC), 3399 and 3542-43 (Kraft converting to a stock container); Willers, Tr. 1812-13

³⁸ With this determination, aggregate shipments in the five remaining inelastic product markets are 30,745,000 gross, 10.9% of total glass container shipments. *See supra* note 33. A 5% price increase in these five markets would be defeated by a diversion equivalent to .55% of total glass sales. Thus, the analysis is iterative. Each time it is determined that collusion is unlikely in a market, selective collusion focused on the remaining markets becomes even more difficult.

(Borden). Unless price were raised on all wide-mouth stock containers of the type used in bottling mayonnaise, the mayonnaise producers could defeat supracompetitive prices by buying additional stock containers from fringe suppliers (Rampley, Tr. 1041; Lusby, Tr. 2472; Leone, Tr. 2695-96) or from independent distributors (Silvani, Tr. 3730-31) or by shifting usage of stock containers purchased from cartel members ostensibly for elastic end-uses. *See* Clements, Tr. 773 (same stock glass container used to package Clements mayonnaise, mustard, salad dressing, and sandwich spread); Bachey, Tr. 3543 (same Kraft stock container will be used for mayonnaise and horse radish). Yet, a price increase on the stock containers in general would affect purchasers in elastic as well as inelastic segments, thereby offsetting the cartel's gains in mayonnaise with losses in other end-uses. These considerations illustrate the principle that price discrimination can only be effective if the sellers can identify the targets for the selective price increases and ensure that the targeted buyers cannot acquire the product through untargeted channels.

Only two witnesses from pickle producers appeared. The witness from Heinz stated that his company had no objections to the transaction (Blecharz, Tr. 4880), and the witness from Cates supported the acquisition (Faulkner, Tr. 1303). The Heinz witness testified that his company was protected from supracompetitive pricing by a long-term requirements contract which tied price increases to cost increases and permitted Heinz to audit Owens' costs (Blecharz, Tr. 4870-71, 4880) and that even without the protections of the contract, Heinz's leverage derived from purchases of glass containers for other items would enable Heinz to defeat a 5-10% collusive price increase on pickle jars. *Id.* at 4881. The witness for Cates acknowledged that his company used stock glass containers in half-gallon and gallon sizes, and, as observed in the discussion concerning mayonnaise, this introduces additional opportunities to defeat supracompetitive pricing.

Wine cooler containers are another market characterized by large buyers. Seagram holds a 36% share, and Gallo, through its Bartles and James brand, accounts for 31-32% of total wine cooler sales. Smith, Tr. 1930, 2031-32. The witness from Seagram testified that its total glass container purchases (over \$90 million) placed it in a "relatively strong bargaining position" in dealing with glass container

suppliers. *Id.* at 2018. Moreover, several of the wine cooler producers have self-manufacturing capabilities. Gallo makes its own wine cooler bottles. Lemieux, Tr. 5549; Mc Mackin, Tr. at 5795.³⁹ Seagram has acquired a glass factory from Tropicana and uses its self-manufacturing capability as a bargaining tool with glass container manufacturers and as a direct source of information as to their costs. Smith, Tr. 1959-61, 2021, 2024. Matilda Bay is produced by the Miller Brewing Company, which owns a glass container factory with the capability and capacity to produce wine cooler bottles. Bachey, Tr. 3536-37; McMackin, Tr. 5829-30.

With premium wines we again find substantial reliance on self-manufacturing. Gallo, the largest U.S. wine company, with about 40% of the market, produces its own glass containers. Bachey, Tr. 3375; Silvani, Tr. 3715; Lemieux, Tr. 5550; Lanigan, Tr. 6203. Heublein, whose Almaden and Inglenook brands make it the second largest California wine producer (with over 10% of that market (CX 328K)), also produces its own bottles, using Madera Glass, which it owns in joint venture with Ball-Incon. Wilson, Tr. 2265-66; Bachey, Tr. 3374; Lemieux, Tr. 5550. Substantial Almaden business was recently lost by Owens to Heublein's in-house production. Lanigan, Tr. 6203. Thus, approximately half the premium wine market is directly sheltered from cartel activities. Moreover, wine is typically sold in stock bottles (Smith, Tr. 1938; Wilson, Tr. 2283; Silvani, Tr. 3716-17), rendering it easier for those wineries who lack self-manufacturing capacity to seek protection through resort to fringe producers and independent distributors and brokers. A witness from a distributor/broker testified that his company sold approximately \$40 million of wine bottles annually and stated the belief that competitive forces are sufficient to defeat a 10% collusive price increase on wine bottles. *Id.* at 3698-99, 3717-18. Complaint counsel's only witness from a significant wine producer (Wine

³⁹ An Owens "Major Account Analysis" for another major wine cooler producer, California Cooler, indicates Owens' concern that container costs be held down so as to help maintain California Cooler's competitive position vis-a-vis Gallo. CX 932Z107.

World) stated that he was neutral regarding the Owens/Brockway transaction.⁴⁰ Wilson, Tr. 2283.

Finally, with regard to jams and jellies we again find the buyers' side of the market largely in the hands of only a few customers. Three producers -- Smucker, Kraft, and Welch -- predominate nationally (Lemieux, Tr. 5549), with Borden's Bama brand holding a 32% regional share in the southeast and southwest. Willers, Tr. 1703-04. Smucker, the largest jam and jelly producer, received price protection under a 3-year contract. Bachey, Tr. 3471-72. Kraft, with total glass container purchases of approximately \$100 million spread among both elastic and inelastic end-uses (Erwin, Tr. 4999), is able to identify and take defensive measures against unwarranted price increases on glass containers. Erwin, Tr. 5016-18. Borden purchases glass containers for a variety of elastic and inelastic needs (Jardis, Tr. 1319; Willers, Tr. 1690-91) and has reduced any exposure to selective price increases by bundling its diverse purchases, informing its glass container suppliers that "we view Borden glass requirements as a single piece of business" and that "[b]usiness will be awarded on the basis of the total package, as it affects Borden, Inc." CX 1471F. Although these considerations alone might not convince us that anticompetitive effects are unlikely, they are sufficient when viewed in conjunction with the difficulty of highly selective collusion. Jams and jellies account for less than 1.2% of total glass container shipments. *See supra* note 33. A 5% price increase focused on jams and jellies could be defeated by diversion of less than .06% of total glass container production. *Id.* The slightest shift from even fringe producers would more than offset collusive efforts.

On the basis of this record as a whole, we find no reasonable probability of collusion in any of the six product markets.⁴¹ The

⁴⁰ The only other witness from a wine producer was Mr. Smith from Seagram, which retains a small wine business after selling most of its wine assets. He testified generally that Seagram's large overall purchases place it in a "relatively strong bargaining position" vis-a-vis glass container producers. Smith, Tr. 2018.

⁴¹ Although evidence of existing, successful price discrimination against inelastic end-uses might caution us to reassess our conclusion, the record discloses none. Complaint counsel's economic expert testified that he was not aware of any significant evidence of present price discrimination with respect to the supply of

extreme selectivity of the anticompetitive activity posited would burden the collusive structure with incremental strains beyond those normally associated with across-the-board collusion. When we add the weight of the various supplemental factors described above, the structure collapses. We conclude that in each of the relevant product markets the evidence suggests that anticompetitive effects are unlikely.⁴²

glass containers. Nelson, Tr. 3037. (He cited one reservation, pricing with regard to soft drink bottles (not a relevant product market), but added that even there "I have no clear evidence that would lead me to conclude that there [is] price discrimination occurring." *Id.* at 3038.) Of course the absence of price discrimination before the Owens/Brockway acquisition (or during antitrust review) is not determinative of what is likely to occur in the future. Its presence, however, might have conveyed a warning of appreciable danger from further concentration.

⁴² Complaint counsel close their brief with a supplemental contention that anticompetitive effects could follow from a collusive failure to pass through projected cost savings even if collusion to raise price were unlikely. CAB 87-89. Complaint counsel argue that customers are unlikely to resist prices that remain constant and that harm from such a failure to pass through cost savings could extend to elastic as well as inelastic end-uses. (Complaint counsel's economic expert identified only beer and soft-drink end-uses, neither of which is inelastic, as using the new technology cited as the primary source of cost savings. Nelson, Tr. 2928, 2930.)

VI. CONCLUSION

We conclude* that the record does not show that Owens' acquisition of Brockway is likely substantially to lessen competition or to tend to create a monopoly in any line of commerce and, therefore, to violate Section 7 of the Clayton Act. Nor does the acquisition constitute a violation of Section 5 of the Federal Trade Commission Act. Accordingly, the complaint filed in this matter is dismissed.

* We find complaint counsel's secondary theory too speculative on this record. It is premised on unproven future productivity improvements that would permit lower prices. Although complaint counsel seek support from past performance by arguing that declining costs have been coupled with increasing or "roughly stable" prices in the recent past, complaint counsel's expert economist actually testified only to "very, very high levels of productivity improvements that have gone a long way to, if not totally, to offset any cost increases due to increased labor rates, for example." Nelson, Tr. 2932. This fails to show that total costs have declined in the past, much less that they will fall in the future. Even assuming that glass container costs do decline, complaint counsel must argue that future price competition from alternative packaging materials will be inadequate to bring prices down. However, there is no reason to assume that the costs and technologies of alternative packaging will not also be changing, and without a far more complete record concerning the future competitive posture of each of the alternatives, we have no factual basis for accepting complaint counsel's claims.

APPENDIX

Table B

SHARE OF 1987 DOLLAR SALES

	<u>(\$ 000)</u>	<u>Share</u>
Owens-Illinois	1,152,864	23.59
Brockway	686,874	14.06
Combined Owens/Brockway	1,839,738	37.65
Anchor/Diamond-Bathurst	1,135,421	23.24
Ball-Incon	524,992	10.74
Triangle (Foster-Forbes)	386,900	7.92
Kerr Glass	145,592	2.98
Central N.Y. (Miller)	101,677	2.08
Latchford Glass	101,088	2.07
Wheaton Industries	87,540	1.79
Gallo	86,145	1.76
Coors	72,140	1.48
Industrial (Seagram/Tropicana)	69,693	1.43
Liberty Glass	60,060	1.23
Glenshaw Glass	44,890	.92
Anchor-Hocking (Carr-Lowrey)	29,543	.60
Hillsboro (Hiram Walker)	26,182	.54
Leone Industries	15,200	.31
Arkansas Glass	14,438	.30
Imports - Canada	42,232	.86
Imports - Mexico	25,492	.52
Imports - Other	77,537	1.59
Total Imports	<u>145,261</u>	<u>2.97</u>
Total	4,886,500	

Pre-Merger HHI:	1,507
Change:	663
Post-Merger HHI:	2,170

	<u>Pre-Merger</u>	<u>Post-Merger</u>
Two-firm Concentration:	46.8	60.9
Four-firm Concentration:	71.6	79.6

Source: CX 1451F

FINAL ORDER

This matter having been heard on the appeal of respondents Owens-Illinois, Inc., BI Acquisition Corporation, and Brockway, Inc., from the initial decision and on briefs and oral argument in support of and in opposition to the appeal, for the reasons stated in the accompanying opinion, the Commission has determined to grant the appeal. Accordingly,

It is ordered, That the complaint is dismissed.

Commissioner Starek and Commissioner Yao not participating.

CONCURRING STATEMENT OF COMMISSIONER MARY L. AZCUENAGA

I concur in the decision to dismiss the complaint in this matter, principally because of the degree of supply side flexibility in the glass container industry. I write separately to sound a few cautionary notes.

The question under Section 7 of the Clayton Act is whether the ability to exercise market power may be created or enhanced. Evidence of actual collusion or higher prices is not required to show a violation of the Act. Instead, “[a] predictive judgment, necessarily probabilistic and judgmental rather than demonstrable . . . , is called for.” *Hospital Corporation of America v. FTC*, 807 F.2d 1381, 1389 (7th Cir. 1986) (Posner, J.), *cert. denied*, 481 U.S. 1038 (1987). Imposing a heavier burden of proof when collusion may take a

different form -- such as selective price increases or stable prices in the face of declining costs,¹ *See slip op. at 36 nn. 41 & 42* -- may result in serious errors of judgement, to the detriment of consumers.

The asserted sophistication of customers as a defense should be viewed with some skepticism. The record shows that glass container purchasers negotiate prices with rather than dictate prices to their suppliers. And their negotiating power appears considerably less when observed in the context of the glass container industry rather than with reference to the markets in which they sell.² *See also* Hovenkamp, "Mergers and Buyers," 77 Va. L. Rev. 1369, 1370 (1991).

¹ *See Detroit Auto Dealers Association, Inc.*, 111 FTC 417, 499 n.24 (1989), *rev'd in part & remanded*, Nos. 89-3388 -- 89-3392 (6th Cir., filed Jan. 31, 1992).

² The annual glass container purchases of Gerber, for example, amount to less than 3% of the annual glass container sales of Owens/Brockway and only 1% of total industry sales, although Gerber has approximately 70% of the baby food market. *See slip op. at 32-33.*

IN THE MATTER OF

ROBERTO FOJO, M.D.

CONSENT ORDER, ETC., IN REGARD TO ALLEGED VIOLATION OF
SEC. 5 OF THE FEDERAL TRADE COMMISSION ACT*Docket C-3373. Complaint, Mar. 2, 1992 -- Decision, Mar. 2, 1992*

This consent order prohibits, among other things, a Miami, Florida, obstetrician/gynecologist from agreeing with any other physician to withhold or threaten to withhold emergency room services at any hospital, and, for a period of five years, from threatening that any physician would or might withhold such services at any hospital.

Appearances

For the Commission: *L. Barry Costilo, Paul Nolan and Alan Soudakoff.*

For the respondent: *Robert P. Manina, Greenberg, Traurig, Hoffman, Lipoff, Rosen & Quentel, P.A., Ft. Lauderdale, FL.*

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that Roberto Fojo, M.D., hereinafter sometimes referred to as respondent, has violated the provisions of said Act, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this complaint, stating its charges in that respect as follows:

PARAGRAPH 1. Respondent Roberto Fojo, M.D., is a physician licensed to practice medicine in the State of Florida and engages in the practice of obstetrics and gynecology in Miami, Florida. At the time of the acts and practices described herein, Dr. Fojo held medical staff privileges at North Shore Medical Center, Inc., in Miami where