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. ("0-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.

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[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):

	Millions of Gross Units	Percent of Total
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	1.4	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):

Company	Number of Plants	1987 Sales ($ Millions)	Share
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):

	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):

	Millions of Pounds
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

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[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.)