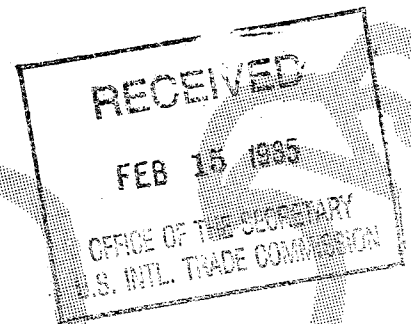


In the Matter of

**CERTAIN PROCESSES FOR
THE MANUFACTURE
OF SKINLESS SAUSAGE
CASINGS AND RESULTING
PRODUCT**

Investigation

No. 337-TA-148/169



USITC PUBLICATION 1624

DECEMBER 1984

UNITED STATES INTERNATIONAL TRADE COMMISSION

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UNITED STATES INTERNATIONAL TRADE COMMISSION
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OFFICE OF THE SECRETARY
U.S. INTL. TRADE COMMISSION

In the Matter of)
CERTAIN PROCESSES FOR THE)
MANUFACTURE OF SKINLESS SAUSAGE)
CASINGS AND RESULTING PRODUCT)

Investigation No. 337-TA-148/169

COMMISSION ACTION AND ORDER

Background

The Commission instituted Inv. No. 337-TA-148 in response to a complaint filed by Teepak, Inc., of Chicago, Illinois (Teepak), and its parent, Bufpak Corp., of New York, New York (Bufpak), to determine whether there is a violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) and 19 U.S.C. § 1337a in the importation and sale of certain skinless sausage casings. (Notice of Institution, 48 Fed. Reg. 23491 (May 25, 1983)). The complaint alleged that such importation and sale constitute unfair methods of competition and unfair acts by reason of (1) infringement of claims 1 and 2 of U.S. Letters Patent 3,456,286; (2) infringement of claims 1, 2, 3, and 5 of U.S. Letters Patent 3,461,484 (the '484 patent); (3) infringement of claims 1 and 3 of U.S. Letters Patent 3,383,222; and (4) infringement of claims 1, 2, and 5 of U.S. Letters Patent Re. 28,281. The complaint further alleged that the effect or tendency of these unfair methods of competition and unfair acts is to destroy or substantially injure an industry, efficiently and economically operated, in the United States.

Inv. No. 337 TA-169 was instituted by the Commission in response to a complaint filed by Union Carbide Corp., of Danbury, Connecticut (Union Carbide), to determine whether there is a violation of section 337 in the importation and sale of the same skinless sausage casings. (Notice of Institution, 48 Fed Reg. 49557-58 (October 26, 1983)). The Union Carbide complaint alleged that such importation and sale constitute unfair methods of competition and unfair acts by reason of (1) infringement of claims 1-8 of U.S. Letters Patent 3,397,069; (2) infringement of claims 2-5 and 7-14 of U.S. Letters Patent 3,704,483; and (3) misappropriation of certain trade secrets. The complaint further alleged that the effect or tendency of these unfair methods of competition and unfair acts is to destroy or substantially injure an industry, efficiently and economically operated, in the United States.

Respondent in both investigations, Viscofan, S.A. (Viscofan), is a Spanish corporation engaged in the production and sale of the skinless sausage casings under investigation. Industria Navarra de Conversion de Envolturas Artificiales, S.A. (Cearsa), is a Spanish corporation owned by the same shareholders as Viscofan, and is in the process of being acquired by Viscofan. Cearsa originally served as a subcontractor engaged in shirring the skinless sausage casings under investigation for respondent Viscofan. Cearsa has been treated as a part of Viscofan for purposes of these investigations.

Following a preliminary conference, the administrative law judge (ALJ) issued an initial determination (ID) designating Inv. No. 337-TA-148 as "more complicated" and consolidating that investigation with Inv. No. 337-TA-169. The Commission issued notice of its decision not to review that ID on November 22, 1983. (48 Fed. Reg. 54140 (November 30, 1983)).

On May 22, 1984, Union Carbide filed an unopposed motion to amend the complaint and notice of investigation in investigation No. 337-TA-169 so as to delete all references to infringement of the claims of U.S. Letters Patent Nos. 3,397,069 and 3,704,483. The ALJ granted the motion at the time of the ID on violation, since discussion at the prehearing conference indicated that the imported skinless sausage casings under investigation do not infringe the claims of those patents, and no evidence was received during the hearing with respect to those patents. (ID at 8-9). Thus, the only unfair act remaining in investigation No. 337-TA-169 is the misappropriation of trade secrets.

On May 24, 1984, Teepak filed an unopposed motion to amend the complaint and notice of investigation in investigation No. 337-TA-148 so as to delete all references to infringement of the claims of U.S. Letters Patent Nos. 3,383,222, 3,456,286, and Re. 28,281. The ALJ granted the motion at the time of the ID on violation, since Teepak and Viscofan had resolved the issues pertaining to those patents between themselves. No evidence on any of these patents was received during the hearing. (ID at 9). Thus, the only remaining unfair act in investigation No. 337-TA-148 is infringement of the '484 patent.

On August 1, 1984, The ALJ issued his ID that there is a violation of section 337 and 19 U.S.C. § 1337a in the importation and sale of the skinless sausage casings under investigation. Specifically, the ALJ determined in Inv. No. 337-TA-148 that respondent Viscofan manufactures skinless sausage casings using a method which would, if practiced in the United States, infringe a valid U.S. patent (U.S. Letters Patent 3,461,484) owned by complainant Bufpak and that respondent Viscofan had misappropriated certain trade secrets owned by complainant Union Carbide in Inv. No. 337-TA-169. The ALJ found all the other elements of a violation of section 337 to exist in each investigation.

The ALJ also determined that respondent Viscofan had failed to prove its affirmative defenses of patent misuse and unclean hands, wherein it alleged that complainants Teepak and Union Carbide had conspired to monopolize the manufacture of skinless sausage casings in the United States by means of illegal patent pooling, cross-licensing, price-fixing, and predatory behavior.

On August 27, 1984, the Commission determined to extend the deadline for deciding whether to review the ID from August 31, 1984, to September 21, 1984, in order to allow time for the receipt and review of comments from government agencies and a for thorough assessment of the issues raised by the petitions for review. 49 Fed. Reg. 35259 (Sept. 6, 1984).

On September 21, 1984, the Commission determined to review one issue raised in respondent Viscofan's petition for review. The Commission determined to review the ALJ's disposition of Motion No. 148/169-17, respondent's motion to redesignate certain documents and deposition testimony as nonconfidential. The Commission further determined not to review the ALJ's determination as to violation of section 337 and 19 U.S.C. § 1337a. 49 Fed. Reg. 39925 (Oct. 11, 1984). The parties were requested to file written submission on the issue under review, and on remedy, the public interest, and bonding, by October 24, 1984. Complainant Union Carbide, respondent Viscofan, and the Commission investigative attorney have submitted briefs on the issue under review. Complainants Teepak and Union Carbide, respondent Viscofan, and the Commission investigative attorney have submitted briefs on the issues of remedy, the public interest, and bonding. Submissions on the issue of the public interest have been received from Members of Congress and from the Secretary of Commerce. The Customs Service has filed a submission on the issue of remedy. No other submissions were received.

Action

Having considered the briefs of the parties, and the record in these investigations, the Commission has determined to affirm the the ALJ's disposition of Motion No. 148/169-17, respondent's motion to redesignate as nonconfidential certain documents and deposition testimony produced by complainant Union Carbide.

Having determined that the issues of remedy, the public interest, and bonding are properly before the Commission, and having reviewed the written submissions filed on remedy, the public interest, and bonding and those portions of the record relating to those issues, the Commission has determined in investigation No. 337-TA-148 to issue a general exclusion order prohibiting entry into the United States, except under license, of small caliber cellulose skinless sausage casings manufactured in accordance with a method which, if practiced in the United States, would infringe claims 1, 2, 3, and 5 of U.S. Letters Patent 3,461,484, owned by complainant Bufpak, for the remaining term of the patent. The Commission has further determined, in investigation No. 337-TA-169, to issue a limited exclusion order prohibiting entry into the United States, except under license from complainant Union Carbide, of small caliber cellulose skinless sausage casings manufactured by Viscofan, S.A. and Industria Navarra de Conversion de Envolturas Artificiales, S.A., of San Sebastian, Spain, for a period of ten (10) years from the date of this order.

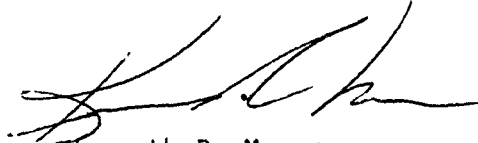
The Commission has also determined that the public interest factors enumerated in section 337(d) (19 U.S.C. § 1337(d)) do not preclude issuance of the aforementioned general exclusion order and limited exclusion order, and that the bond during the Presidential review period should be in the amount of 55 percent of the entered value of the articles concerned.

Order

Accordingly, it is hereby ORDERED THAT—

1. Small caliber cellulose skinless sausage casings manufactured abroad in accordance with the process disclosed by claims 1, 2, 3, and 5 of U.S. Letters Patent 3,461,484 are excluded from entry into the United States for the remaining term of the patent, except under license of the owner of the patent;
2. Persons desiring to import small caliber cellulose skinless sausage casings into the United States may petition the Commission to institute such further proceedings as may be appropriate in order to determine whether the sausage casings sought to be imported do not fall within the scope of paragraph (1) of this order, and therefore should be allowed entry into the United States;
3. Small caliber cellulose skinless sausage casings manufactured by Viscofan, S.A. and Industria Navarra de Conversion de Envolturas Artificiales, S.A., of San Sebastian, Spain, or any of its affiliated companies, parents, subsidiaries, or other related business entities, or their successors or assigns, are excluded from entry into the United States for a period of ten (10) years from the date of this order, except under license of Union Carbide Corporation.
4. The articles ordered to be excluded from entry into the United States shall be entitled to entry under bond in the amount of 55 percent of the entered value of the subject articles from the day after this order is received by the President pursuant to subsection (g) of section 337 of the Tariff Act of 1930, until such time as the President notifies the Commission that he approves or disapproves this action, but, in any event, not later than 60 days after the date of receipt of this action;
5. The Secretary shall serve copies of this Commission Action and Order and the Commission Opinion in support thereof upon each party of record to this investigation and publish notice thereof in the Federal Register; and
6. The Commission may amend this Order in accordance with the procedure described in section 211.57 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 211.57).

By order of the Commission.

A handwritten signature in dark ink, appearing to read 'K. R. Mason', written in a cursive style.

Kenneth R. Mason
Secretary

Issued: November 26, 1984

582159

Investigation No. 337-TA-148/169

INTRODUCTION

Inv. No. 337 TA-169 was instituted by the Commission in response to a complaint filed by Union Carbide Corp., of Danbury, Connecticut (Union Carbide), to determine whether there is a violation of section 337 in the importation and sale of the same skinless sausage casings. (Notice of

Institution, 48 Fed Reg. 49557-58 (October 26, 1983)). The Union Carbide complaint alleged that such importation and sale constitute unfair methods of competition and unfair acts by reason of (1) infringement of claims 1-8 of U.S. Letters Patent 3,397,069; (2) infringement of claims 2-5 and 7-14 of U.S. Letters Patent 3,704,483; and (3) misappropriation of certain trade secrets. The complaint further alleged that the effect or tendency of these unfair methods of competition and unfair acts is to destroy or substantially injure an industry, efficiently and economically operated, in the United States.

Respondent in both investigations, Viscofan, S.A. (Viscofan), is a Spanish corporation engaged in the production and sale of the skinless sausage casings under investigation. Industria Navarra de Conversion de Envolturas Artificiales, S.A. (Cearsa), is a Spanish corporation owned by the same shareholders as Viscofan, and is in the process of being acquired by Viscofan. Cearsa originally served as a subcontractor engaged in shirring the skinless sausage casings under investigation for respondent Viscofan. Cearsa has been treated as a part of Viscofan for purposes of these investigations.

Following a preliminary conference, the administrative law judge (ALJ) issued an initial determination (ID) designating Inv. No. 337-TA-148 as "more complicated" and consolidating that investigation with Inv. No. 337-TA-169. The Commission issued notice of its decision not to review that ID on November 22, 1983. (48 Fed. Reg. 54140 (November 30, 1983)).

On May 22, 1984, Union Carbide filed an unopposed motion to amend the complaint and notice of investigation in investigation No. 337-TA-169 so as to delete all references to infringement of the claims of U.S. Letters Patent Nos. 3,397,069 and 3,704,483. The ALJ granted the motion at the time of the ID on violation, since discussion at the prehearing conference indicated that

the imported skinless sausage casings under investigation do not infringe the claims of those patents, and no evidence was received during the hearing with respect to those patents. (ID at 8-9). Thus, the only unfair act remaining in investigation No. 337-TA-169 is the misappropriation of trade secrets.

On May 24, 1984, Teepak filed an unopposed motion to amend the complaint and notice of investigation in investigation No. 337-TA-148 so as to delete all references to infringement of the claims of U.S. Letters Patent Nos. 3,383,222, 3,456,286, and Re. 28,281. The ALJ granted the motion at the time of the ID on violation, since Teepak and Viscofan had resolved the issues pertaining to those patents between themselves. No evidence on any of these patents was received during the hearing. (ID at 9). Thus, the only remaining unfair act in investigation No. 337-TA-148 is infringement of the '484 patent.

On August 1, 1984, the ALJ issued his ID that there is a violation of section 337 and 19 U.S.C. § 1337a in the importation and sale of the skinless sausage casings under investigation. Specifically, the ALJ determined in Inv. No. 337-TA-148 that respondent Viscofan manufactures skinless sausage casings using a method which would, if practiced in the United States, infringe a valid U.S. patent (U.S. Letters Patent 3,461,484) owned by complainant Bufpak and that respondent Viscofan had misappropriated certain trade secrets owned by complainant Union Carbide in Inv. No. 337-TA-169. The ALJ found all the other elements of a violation of section 337 to exist in each investigation. The ALJ also determined that respondent Viscofan had failed to prove its affirmative defenses of patent misuse and unclean hands, wherein it alleged that complainants Teepak and Union Carbide had conspired to monopolize the manufacture of skinless sausage casings in the United States by means of illegal patent pooling, cross-licensing, price-fixing, and predatory behavior.

On August 27, 1984, the Commission determined to extend the deadline for deciding whether to review the ID from August 31, 1984, to September 21, 1984, in order to allow time for the receipt and review of comments from government agencies and a for thorough assessment of the issues raised by the petitions for review. 49 Fed. Reg. 35259 (Sept. 6, 1984).

On September 21, 1984, the Commission determined to review one issue raised in respondent Viscofan's petition for review. The Commission determined to review the ALJ's disposition of Motion No. 148/169-17, respondent's motion to redesignate certain documents and deposition testimony as nonconfidential. The Commission further determined not to review the ALJ's determination as to violation of section 337 and 19 U.S.C. § 1337a. 49 Fed. Reg. 39925 (Oct. 11, 1984). The parties were requested to file written submission on the issue under review, and on remedy, the public interest, and bonding, by October 25, 1984. Complainant Union Carbide, the Commission investigative attorney (IA), and respondent Viscofan have submitted briefs on the issue under review. Complainants Teepak and Union Carbide, respondent Viscofan, and the Commission investigative attorney have submitted briefs on the issues of remedy, the public interest, and bonding. Submissions on the issue of the public interest have been received from Members of Congress and from the Secretary of Commerce. The Customs Service has filed a submission on the issue of remedy. No other submissions were received.

BACKGROUND

A. The Parties

Complainants in Inv. No. 337-TA-148, are Bufpak Corp. and its subsidiary, Teepak, Inc. (Teepak). Teepak is a Delaware corporation engaged in the manufacture and sale of synthetic skinless sausage casings.

Complainant in Inv. No. 337-TA-169, Union Carbide Corp. (Union Carbide) is a New York corporation engaged in the manufacture and sale of sausage casings of various types and sizes. Union Carbide's Films-Packaging Division manufactures and sells, inter alia, the skinless sausage casings under investigation.

Viscora, S.A. (Viscora) is a French subsidiary of Union Carbide. Union Carbide has been the sole shareholder of Viscora since January 1, 1982. Prior to that time, Union Carbide owned 50 percent of Viscora; the remaining 50 percent was owned by Novacel, a French company. Viscora produces and sells skinless sausage casings. 1/

Respondent in both investigations, Viscofan, S.A. (Viscofan), is a Spanish corporation engaged in the production and sale of the skinless sausage casings under investigation. Industria Navarra de Conversion de Envolturas Artificiales, S.A. (Cearsa), is a Spanish corporation owned by the same shareholders as Viscofan, and is in the process of being acquired by Viscofan. Cearsa originally served as a subcontractor engaged in shirring 2/ the skinless sausage casings under investigation for respondent Viscofan. Cearsa has been treated as a part of Viscofan for purposes of these investigations.

1/ While not a party to the investigation, Viscora is involved in that the misappropriation of trade secrets took place from Viscora's plant in Beauvais, France.

2/ Shirring is a finishing process whereby skinless sausage casings are densely pleated and compressed into short, rigid, tubular sticks. See pp. 6-8, infra.

B. The Product and the Technology of Manufacture

The product involved in these investigation is small caliber tubular cellulose sausage casings, known as skinless sausage casings. 3/

The general manufacturing process for skinless sausage casings as practiced by each of the parties to these investigations involves three distinct manufacturing operations: (1) chemical preparation, which involves the manufacture of viscose from natural cellulose fibers; (2) simultaneous regeneration of the cellulose and continuous formation of accurately-sized cellulose tubes in extrusion machines, including drying the extruded casing under carefully controlled conditions and winding it onto reels of semi-finished material called "flat stock;" and (3) shirring, which is a finishing operation during which lengths of flat stock are finely pleated and compressed into short, self-supporting, tubular sticks. 4/

The chemical preparation involves the derivation of viscose from a cellulose source, * * * * * . Preparation of viscose requires application of chemical processing technology which originated with the manufacture of rayon and cellulose sheets (i.e. cellophane), and which has been adapted to the manufacture of cellulose sausage casings. Chemical

3/ There are various other kinds of sausage casings besides skinless sausage casings: (1) large caliber cellulose casings, which are used for, e.g., bologna and salami; (2) fibrous casings, which are larger, fiber-web-reinforced cellulose casings used for sliced sausage products and smoked meats; (3) MP fibrous casings with an impermeable outside plastic coating used on liver sausage and other sausages where impermeability is desired; (4) animal casings, made from the intestines of animals, which are used for all types of meat products; (5) collagen casings, which are regenerated casings made from animal hides and used for both large and small sausages; and (6) plastic tubings, which are used for large specialty products such as liver sausages. These casings are not normally removed from the product prior to sale, and are not involved in these proceedings. ID at 12, FF 12.

4/ ID at 13, FF 13.

preparation also involves the preparation of an acid bath which serves to coagulate and regenerate the liquid viscose into a solid, seamless cellulose tube during the manufacturing operation. 5/

The manufacturing operation involves the continuous extrusion of viscose on a large machine with multiple extrusion nozzles, and drying operations. At each station of the extrusion machine, viscose and acid bath are pumped through a nozzle * * * * *. The viscose emerges upward from the nozzle, * * * * *, into a tall, slender aquarium of acid bath. * * * * *. Economic manufacture requires that the casing travel at high speed, and that the process be continuous. 6/

The finishing or shirring operation involves the use of highly specialized machines which accept a reel of flat stock at one end, and turn out a succession of closely pleated, short, rigid, tubular sticks of sausage casing at the other. These sticks are densely pleated, or shirred, and compressed, so that a stick of less than 20 inches in length contains between 50 and 160 feet of sausage casing. 7/

Meatpackers use skinless sausage casings to make sausage products by sliding a stick of shirred casing over the stuffing tube or horn of a sausage

5/ ID at 13, FF 14.

6/ ID at 14, FF 15-18.

7/ ID at 15, FF 19.

stuffing machine and pumping a meat emulsion into the stick as it de-shirrs, or extends. The meat-filled casing is twisted at intervals to define individual sausages or links. The long chain of links produced is cooked, after which the casing is normally removed, and the resulting product is sold as "skinless" sausages or frankfurters. 8/

C. The Patent and the Trade Secrets

U.S. Letters Patent 3,461,484 (the '484 patent), entitled "Process for Shirring Sausage Casings" issued to Lionel C. Arnold on August 19, 1969, and was assigned to Teepak. The '484 patent issued on the basis of application Serial No. 720,140, filed on April 10, 1968, which was a division of the original application, Serial No. 564,961, filed on July 13, 1966. The '484 patent relates to improvements in the process of shirring artificial sausage casings. Prior to the invention of the '484 patent, commercially acceptable shirring processes were described in three patents issued to Blizzard (the Blizzard patents) and two patents issued to Matecki (the Matecki patents). These patents generally describe a shirring process where an inflated tubular casing is positioned around an internal mandrel and presented to a shirring location, where teeth apply shirring forces intermittently at spaced locations around the periphery of the inflated casing. The '484 patent improvement consists of a method in which the shirring forces are applied in discrete segments along a substantially continuous helical line. 9/

The invention of the '484 patent was prompted by the development in the early 1960's of a highly automated meat-stuffing machine known as the "Frank-A-Matic," which operated at very high speed. This machine involved the

8/ ID at 12, FF 11.

9/ ID at 22, FF 47.

use of an automatic feeding mechanism for casing sticks which required relatively straight sticks of uniform diameter which were not susceptible to undue breaking during handling. In addition, the high speed of the machine made it desirable to provide the maximum length of casing possible in the minimum stick length in order to minimize disruptions in the operating time of the machine. It was also important that the sticks de-shirr uniformly and with minimal breakage in the course of the stuffing operation. Shirred sticks produced by the Blizzard and Matecki methods were not suitable for use with the Frank-A-Matic equipment, as they did not have the desired uniformity in diameter, straightness, resistance to breaking, and compactness. 10/ Sticks produced in accordance with the method of the '484 patent are well-suited for use with the Frank-A-Matic equipment. 11/

Union Carbide alleged that its overall, integrated sausage casing manufacturing operations comprise a trade secret which has been misappropriated by Viscofan. 12/ Seven specific trade secrets were designated as representative examples for the purposes of this investigation. 13/ The seven specific trade secrets asserted by Union Carbide cover every phase of casing manufacture, from composition of the viscose, to extrusion of the casing, and finishing with the shirring operation. They concern several specific aspects in each stage of production, including standards and specifications, and the design and construction of particular pieces of machinery and equipment. The seven alleged trade secrets involve:

10/ ID at 21, FF 42.

11/ ID at 23, FF 48-50.

12/ ID at 247.

13/ Id.

1. * * Carryover;
2. Extrusion Nozzle and Mandrel Assembly;
3. Chemical, Quality Control, and Manufacturing Standards and Specifications;
4. Overall Shirring Machine Configuration;
5. Shirring Head Assembly and Lubrication System;
6. External Configuration and Construction of Shirring Mandrel; and
7. Shirring Mandrel Internal Spray System. 14/

D. Events in France and Spain

A central issue presented in Inv. No. 337-TA-169 is the source of the technology utilized in Viscofan's manufacturing operations. Viscofan was organized in 1975 for the purpose of manufacturing cellulose sausage casings. 15/ Two companies were principally involved in the formation of Viscofan - Papelera, a company involved in the manufacture of cellophane film, and Pingon, a company involved in the manufacture of collagen casings. 16/ The two companies, together with a number of individuals, collaborated to set up Viscofan. 17/ At some point between 1976 and 1978, a pilot plant was set up at Viscofan's facility at Caseda, Spain, which apparently continued developmental work started at Papelera. By 1979, Viscofan had succeeded in producing a casing of commercial quality, and commenced full-scale, commercial manufacturing and sale of cellulose casings. 18/

14/ See ID at 41-83 for descriptions of the trade secrets.

15/ ID at 15, FF 20.

16/ ID at 17, FF 27-28.

17/ Id.

18/ ID at 18. FF 27-28.

In 1975, two of Viscofan's principals discussed the possibility of obtaining a license for Union Carbide's casing technology with the chairman of Viscora, Union Carbide's French subsidiary. 19/ Since Viscora itself was a licensee of the technology at that time, it was not in a position to grant such a license. Union Carbide alleged that after this initial contact produced no positive results, the principals of Viscofan approached employees of Viscora and its subcontractors, and with their assistance, removed technical drawings, specifications, and pieces of equipment from Viscora's plant, which were copied, and served as the basis on which Viscofan's manufacturing operations were developed. 20/

Union Carbide's knowledge of these events derives from information provided by one of the two principals involved in the initial contact with Viscora and the theft, Jesus Barber. Mr. Barber, after an apparent falling out with the other Viscofan shareholders, approached Viscora and recounted the details of Viscofan's efforts to obtain Viscora's technology. 21/ He offered his assistance to Viscora and Union Carbide in any actions they might take, *

***** 22/

A criminal investigation was instituted in France, *****

19/ ID at 84, FF 267.

20/ See ID at 55-89 for a description of the alleged criminal conduct.

21/ ID at 89, FF 290.

22/ ID at 90, FF 294.

Following a trial in 1983, certain individuals were convicted in France of theft and bribery of employees. 23/ The judgment of the French court made no findings concerning the value or secrecy of the items and information stolen.

Viscora also instituted a similar action in Spain. 24/ The Spanish court ordered an expert study and report on the similarities between Viscora's and Viscofan's operations. However, the Spanish court determined that it did not have jurisdiction over the alleged thefts, which occurred in France, and therefore did not make any decision on the substance of Viscora's charges.

Substantial portions of the records of the French and Spanish investigations were entered in the record of the Commission investigations, including the judgments of the French and Spanish courts, and the reports of the experts assigned to study Viscora's and Viscofan's operations. Judge Duvall determined that the results of the foreign actions have no collateral estoppel or res judicata effect on the Commission proceedings, but that the documents introduced were relevant to the issue of whether there was misappropriation of Union Carbide's trade secrets. 25/ He concluded, in addition, that there was sufficient evidence in the record to establish the probability that Viscofan had access to and benefited from Viscora's (and consequently Union Carbide's) technology, and that the evidence submitted from the French and Spanish proceedings was not an indispensable element of his determination of misappropriation, but rather served to corroborate the inference drawn from other evidence of record that misappropriation must have occurred. 26/

23/ See ID at 90-92 for a description of the French proceedings.

24/ See ID at 92-94 for a description of the Spanish proceedings.

25/ ID at 250-253.

26/ ID at 253.

A. The issue on review: Denial of Motion to Redesignate Certain Documents and
Deposition Testimony as Non-confidential

The Commission granted review of the ALJ's denial, during the course of the investigation, of a motion, filed by respondent Viscofan, to redesignate certain documents and deposition testimony as nonconfidential. During discovery in this investigation, * * * * *. The information was provided under protective order. Viscofan sought to have this information placed on the public record * * * * *. The ALJ denied the motion at the prehearing conference. 27/

We have determined to affirm the ALJ's disposition of this motion. 28/ The proper standard of review on this issue is whether the ALJ abused his discretion in denying respondent Viscofan's motion. Evidence in a section 337 investigation is gathered solely for the purposes of that proceeding. The statute and rules do not provide any support for the notion that information should be declassified because it is sought for use in a foreign court proceeding. Moreover, the * * * * * are "expenditures" of Union Carbide, and thus qualify as confidential business information within the literal terms of the rules and the ALJ's protective order. Nothing in rule 201.6 as it existed when the protective order in this investigation issued, and the subject information was produced, limited the type of "expenditure" which would qualify as confidential. The ALJ's decision was reasonable and not an abuse of discretion, and therefore is affirmed.

27/ Prehearing Conference transcript at 15.

28/ Vice Chairman Liebler dissents from this determination. See her Additional Views, which follow.

B. Remedy

The issue of violation having been decided by our determination not to review those portions of Judge Duvall's ID dealing with violation of section 337 and 19 U.S.C. § 1337a, the issues remaining to be decided are those of remedy, the public interest, and bonding.

1. Investigation No. 337-TA-148

We have determined that the appropriate remedy in this investigation is the issuance of a general exclusion order. 29/ The facts of this case satisfy the criteria established in Spray Pumps for the issuance of a general exclusion order. 30/ In Spray Pumps, the Commission noted that it has an obligation to balance complainant's interest in complete protection against the inherent potential of a general exclusion order to disrupt legitimate trade. 31/ Therefore, the Commission has since required that a complainant seeking a general exclusion order prove "both a widespread pattern of unauthorized use of its patented invention and certain business conditions from which [the Commission] might reasonably infer that foreign manufacturers other than the respondents to the investigation may attempt to enter the U.S. market with infringing articles." 32/

In Spray Pumps, the Commission stated that in order to establish a widespread pattern of unauthorized use, there must be:

29/ Vice Chairman Liebelier dissents from this determination. See her Additional Views, which follow.

30/ Investigation No. 337-TA-90, USITC Pub. 1199; 216 U.S.P.Q. 465 (1981).

31/ It should be noted that the Commission did not issue a general exclusion order in Spray Pumps, as the facts of that investigation did not meet the criteria set forth.

32/ Id. at 18.

- (1) a Commission determination of unauthorized importation into the United States of infringing articles by numerous foreign manufacturers; or
- (2) pending foreign infringement suits based upon foreign patents which correspond to a domestic patent in issue; and
- (3) other evidence which demonstrates a history of unauthorized foreign use of the patented invention. 33/

There is evidence of record suggesting that future imports of skinless sausage casings are likely to be infringing. Despite Viscofan's claims, the record supports Teepak's argument that the prior art technology does not produce shirred sausage casings which are acceptable for use by the U.S. meatpacking industry. This implies that imports are likely to be infringing, absent development of new, noninfringing technology. Although there is no evidence of pending foreign infringement suits based on foreign patents corresponding to the '484 patent, Teepak believes that the shirring machine manufactured by Kollross, GmbH, a West German manufacturer of machinery, infringes the '484 patent. Teepak's patent counsel has met with representatives of Kollross to discuss Teepak's claim that the Kollross machine infringes, and has notified manufacturers of skinless sausage casings who have bought the Kollross machine that their use of the machine constitutes infringement. * * * * *

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* * * * *, 34/ As

33/ Id. at 18-19 (footnotes omitted).

34/ FF 625.

discussed below, our order has a provision allowing potential importers to petition the Commission for a determination that their process does not infringe the '484 patent.

In order to establish the "business conditions" referred to in Spray Pumps as a prerequisite for the issuance of a general exclusion order, the Commission has considered:

- (1) an established demand for the patented product in the U.S. market and conditions of the world market;
- (2) the availability of marketing and distribution networks in the United States for potential foreign manufacturers;
- (3) the cost to foreign entrepreneurs of building a facility capable of producing the articles;
- (4) the number of foreign manufacturers whose facilities could be retooled to produce the article; or
- (5) the cost to foreign manufacturers of retooling their facility to produce the articles. 35/

The record demonstrates that the demand in the United States for skinless sausage casings having the characteristics conferred by the '484 patent is established. There are a number of customers for the casings, and it appears from the evidence of record that marketing and distribution would not be a problem for potential importers. Viscofan was able to conclude a distribution and marketing agreement with an American corporation before it was certain that its casings were commercially acceptable in the United States. Although the record does not indicate that there are a large number of foreign

35/ Spray Pumps, supra, at 18-19.

manufacturers who have the capacity to produce skinless sausage casings for the United States market, this does not preclude the Commission from issuing a general exclusion order.

The principal difficulty with a general exclusion order as the remedy in this investigation is the potential to disrupt legitimate trade. It is extremely difficult, if not impossible, to determine from a physical examination of shirred sausage casings whether they were manufactured in accordance with the method of the '484 patent. The ALJ's determination that Viscofan practices the method of the '484 patent was based on an examination of the casings, microphotographs of pleat patterns, and an analysis of the operation of various shirring machines. It is unlikely that it will be feasible for the Customs Service to go through the same process. We therefore have adopted the the solution first taken in Certain Multicellular Plastic Film, Inv. No. 337-TA-54, USITC Pub. 987, (1979), aff'd sub nom., Sealed Air Corp. v. USITC, 645 F.2d 976 (C.C.P.A. 1981).

Multicellular Plastic Film also involved infringement of a process patent where it was impossible to distinguish the product manufactured in accordance with the patented method from one manufactured by a noninfringing process. In that case, the Commission issued a general exclusion order which provided (in paragraph 3 of the order) that any persons seeking to import multicellular plastic film could petition the Commission to institute further proceedings for the purpose of determining whether the film sought to be imported should be allowed into the United States. The Commission noted:

With respect to film produced by foreign manufacturers who were not respondents in the Commission's investigation, paragraph 3 is intended to insure that only such film found upon further investigation not to have been manufactured by a process infringing [the claims of the

subject patent] will be allowed entry. The effect of paragraph 3 is to place the burden of establishing noninfringement upon would-be importers rather than to require complainant, the aggrieved party in this matter to prove infringement.

Id. at 23.

Viscofan has argued that a cease and desist order is the proper remedy in this investigation. At the threshold of considering the use of a cease and desist order in the circumstances of this case, the Commission would have to determine that Viscofan's "new process" for production destined for the United States is in fact noninfringing as Viscofan claims. Then, some workable means would have to be found for ensuring that Viscofan uses only this "new process" for production destined for the United States. The record in this investigation does not give the Commission reason to treat Viscofan's assurances as the basis for a cease and desist order with the expectation that it will be an effective remedy. The Commission does not have the means, or indeed the jurisdiction, to conduct plant inspections in Spain, as proposed by Viscofan, nor is any other workable means apparent. As to determining whether or not the "new process" infringes the patent, under the petition-provision of the general exclusion order Viscofan can come before the Commission and, in a full fact-finding proceeding, demonstrate that its process does not infringe the claims of the '484 patent. Having been found to practice a method which infringes the '484 patent, and considering the shortcomings of the suggested alternatives, this is not an undue burden on Viscofan.

2. Investigation No. 337-TA-169

We have determined that the appropriate remedy in this investigation is the issuance of a limited exclusion order, barring the importation of small

caliber skinless sausage casings manufactured by Viscofan, for a period of ten years from the date of our order. It is generally accepted that the duration of relief in a case of misappropriation of trade secrets should be the period of time it would have taken respondent independently to develop the technology using lawful means. 3 Milgrim, Trade Secrets § 7.08[1] (1981); Certain Apparatus for the Continuous Production of Copper Rod, Inv. No. 337-TA-52, USITC Pub. 1017 (1979) at 67. Respondent Viscofan and the IA have made their analysis in terms of the various elements of trade secret technology discussed in the ID. We believe that this approach ignores the interrelationships between and among the trade secrets and technology involved, as well as the ALJ's conclusion that six specific trade secrets were found to have been misappropriated. It is true that some of those trade secrets consist of "certain aspects" of a machine, system, or standards. See ID at 360-361. However, to issue a remedial order based on the time necessary to develop each such aspect would ignore the fact that Viscofan had the benefit of the entire machine, system, or set of standards, including non-trade-secret elements, which it had misappropriated, from which to work in developing its "new technology." The trade secret aspects are not independent of the non-trade-secret aspects of the technology involved. Therefore, we have determined to consider a single independent development time for the six trade secrets found by the ALJ to have been misappropriated.

Viscofan and the IA have suggested various time periods for independent development ranging from three to eighteen months. 36/ It is not entirely clear what evidence the IA considered in developing these time periods. Viscofan's recommendations are based on the witness statements submitted with

36/ See Viscofan brief at 42-43, Brief of the IA at pp. 11-12 of Appendix B.

its Brief on remedy, which basically suggest that, given the breadth of the publicly available information on sausage casing technology, the development of alternative technology to the misappropriated technology would be a relatively simple procedure, requiring little time beyond that necessary for assembling and testing the machines and procedures involved. Union Carbide argues that Viscofan could never have independently developed a successful sausage casing technology without the misappropriation, and therefore suggests that permanent relief would be appropriate in this case. However, Union Carbide further suggests, based on the evidence of its experts, that given adequate resources, both financial and engineering, and the impetus to undertake a risky development project, a shirring technology could be developed in between nine to twelve years, and an extrusion technology could be developed in between twelve to fifteen years. Union Carbide notes that its own development of the technology for sausage casing manufacture, including the trade secret aspects, encompassed more than fifty years, and that the suggestion of Viscofan's experts that the confidential technology would be a quick design job is wholly incredible.

While we are not satisfied with the evidence of the time period necessary to develop the trade secret technology in this investigation, on the whole we find Union Carbide's position most persuasive. Viscofan's assertions regarding independent development made by Viscofan in the course of its defense to the misappropriation charge were found by the ALJ to be unsupported by the evidence. To now conclude that Viscofan could have developed alternative technology for the misappropriated trade secrets in a relatively short time would be to give it the benefit of having had the misappropriated trade secrets for a period of years as a basis from which to work. We believe

that this would be a wholly inequitable result. We therefore have determined that our remedial order should apply for a period of ten years.

Viscofan and the IA contend that a cease and desist order is the only appropriate remedy in a trade secrets investigation. In the only prior trade secrets investigation in which the Commission gave a remedy, the Commission entered a cease and desist order. The present case is distinguishable from Copper Rod on two grounds. First, the record in Copper Rod indicates that a personal relationship existed between the parties. Copper Rod, supra at 66-67. No such relationship has been found to exist in the instant case. While that factor makes a cease and desist order appropriate, other considerations aside, it does not make a cease and desist order the exclusive remedy in such cases. Second, and more importantly, the limited exclusion order was not part of the Commission's arsenal of remedies until two years after Copper Rod was decided.

In this case, a cease and desist order would probably be ineffective. Viscofan has represented that it can put into operation a separate production line, which does not incorporate the misappropriated trade secrets, use only that line for U.S. production, certify each shipment, and open its plant to inspection by Commission-appointed experts to ensure that it is not using the misappropriated trade secrets. Since there is no means by which we can determine from the casings whether they were manufactured by a process which incorporates the misappropriated trade secrets, something of the sort proposed by Viscofan would be called for if a cease and desist order were to be justified. However, as previously stated, on the record in this investigation the Commission cannot confidently base the remedy on Viscofan's assurances, and the Commission has neither the jurisdiction nor means to conduct plant

inspections in Spain. Therefore, exclusion is the only remedy which promises to be reasonably effective

The final issue to be determined with respect to the remedy in this investigation is when the period of exclusion should commence running. Union Carbide argues that the period of exclusion should commence running on the date the Commission issues its order. Viscofan and the IA cite Syntex Ophthalmics, Inc. v. Novicky, Docket No. 84-838 (Fed. Cir. October 3, 1984) for the proposition that the relief in a trade secrets case should commence running on the date of the misappropriation. However, the Federal Circuit did not squarely decide the issue of when the period of injunctive relief should commence running. In Brunswick Corp. v. Outboard Marine Corp., 404 N.E.2d 205, 207 (Ill. 1980) the Illinois Supreme Court noted that "the exact nature and duration of the remedy must be tailored to fit the facts of the particular case." The court indicated that where the defendant had no means of securing the misappropriated information lawfully, injunctive relief could be entered even though the defendant had refrained from using the misappropriated information for a period equal to the theoretical independent development period.

In its only previous determination on this issue, Copper Rod, supra, the Commission ordered the period of the remedy to commence running on the date of entry of the remedial order. We have determined that the ten year period of exclusion of Viscofan's casings should run from the date of our order. The facts of this investigation, particularly the fact that the misappropriation involved an actual theft of trade secrets, support the conclusion that Viscofan should not be credited with the time between the misappropriation and the entry of the Commission's remedial order.

C. The public interest

As required by statute, the Commission has considered the effect which issuance of an exclusion order in this investigation would have "upon the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers." 19 U.S.C § 1337(d). It is highly unlikely that exclusion of this product will have an adverse effect on any of these public interest factors.

In the public interest portion of its brief, Viscofan has attempted to resurrect its antitrust arguments. Those issues were heard by the ALJ and decided against Viscofan and do not merit further consideration.

Demand for sausage casings in the United States is stagnant, and the two U.S. producers, complainants Teepak and Union Carbide, have ample capacity to meet the entire domestic demand and distribute their product throughout the United States.

D. Bonding

Section 337(g) provides for the entry of infringing articles upon the payment of a bond during the 60-day Presidential review period. 19 U.S.C. § 1337(g)(3). In determining the amount of the bond, the Commission generally establishes an amount sufficient to "offset any competitive advantage resulting from the unfair method of competition or unfair act enjoyed by persons benefiting from the importation." S. Rep. No. 93-1298, 93d Cong., 2d Sess. 198 (1974).

We have determined to establish a bond of 55 percent of the entered value of respondent's skinless sausage casings. The cases complainant Teepak cites in support of the imposition of a 100 percent bond involved large, expensive,

custom-made machines, of which relatively few were sold. In such a case, a full value bond seems reasonable. Sausage casings, however, are a relatively low cost, fungible product, and are sold in large quantities in the United States. In light of the limited information available as to the likely selling price of Viscofan casings in the United States, we have determined to establish a 55 percent bond, as suggested by the IA. This figure is based on the difference between the proposed list price of Viscofan's U.S. distributor, Brechteen, and the price Brechteen had agreed to pay Viscofan for casings. Brechteen's proposed list price was the same as Teepak's and Union Carbide's, and therefore, this bond would ensure that Viscofan casings imported during the Presidential review period would be sold for the same price as the domestic products.

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I concur with the majority in all sections of the opinion except for its treatment of the issue of confidentiality and its choice of an appropriate remedy for respondent Viscofan's patent infringement.

1. Issue on review: Confidentiality.

Chairwoman Stern and I voted to review the ALJ's ruling on motion 148/169-17 denying redesignation of an expenditure by complainant Union Carbide and its subsidiary Viscora. The expenditure *****

***** Pursuant to discovery in the 337 hearing and under protective order, the respondent learned for the first time that ***** A motion to reclassify this information was dismissed by the ALJ. The respondent petitioned for review on this issue as well as the entire Initial Determination. I do not concur with the majority's determination to affirm the ALJ on this issue.

Rule 201.6 provides that

Confidential business information is information which concerns or relates to the trade secrets, processes, operations, style of works, or apparatus, or to the production, sales, shipments, purchases,

transfers, identification of customers, inventories, or amount or source of any income, profits, losses, or expenditures of any person, firm, partnership, corporation or other organization, or information of commercial value, the disclosure of which is likely to have the effect of either (1) impairing the Commission's ability to obtain such information as is necessary to perform its statutory functions, or (2) causing substantial harm to the competitive position of the ... corporation ... from which the information was obtained, unless the Commission is required by law to disclose such information(emphasis added).

It is my opinion that information concerning ***** is not confidential business information because 1)it is not ordinary financial information and 2)would have to be given to anyone requesting it under the Freedom of Information Act.

A. The Freedom of Information Act

The Freedom of Information Act ("FOIA") is intended to provide members of the public with access to the various documents filed with federal agencies. Unless an agency is granted an exemption from FOIA, or unless the information is within the limited class of information exempted from disclosure in FOIA, the agency must make the information requested available to anyone requesting it. The Commission does not have an across-the-board exemption from FOIA.

Although there appears to be some support for the position that Congress provided the Commission with a limited exemption in Title VII cases, there is no such evidence in Section 337 cases and the Commission must act within the confines of FOIA.

Moreover, the language of our rule tracks the judicial interpretation of exemption b(4) of FOIA,¹ the only exemption relevant for purposes of this inquiry.

Exemption b(4) provides that FOIA does not apply to trade secrets and commercial or financial information obtained from a person and privileged or confidential.² The test which has evolved in the federal courts to determine whether information is business confidential is whether the release of such information would 1) substantially harm the competitive position of the firm or 2) impair the ability of the agency to collect necessary data in the future.³

Disclosure of the ***** would not substantially harm the competitive position of Union Carbide. As Union Carbide concedes, such disclosure would only "embarrass." Embarrassment falls far short of passing the threshold for allowing nondisclosure of this information.⁴

As for the ability of the Commission to gather necessary information in the future, this argument always proves too much.

1. National Parks and Conservation Assoc. v. Morton, 498 F.2d 765, 770 (D.C. Cir. 1974).

2. 5 U.S.C. 552 (1977).

3. National Parks, at 770.

4. See Iglesias v. CIA, 525 F.Supp. 547 (DCDC 1981) (conclusory and generalized allegations of competitive harm are unacceptable).

As Judge Saxon stated at the inaugural ITC Trial Lawyers meeting on November 19, 1984, why not hold the entire hearing in camera and avoid any and all problems with disclosure? Any information released by the Commission may have a potentially chilling effect on future discovery proceedings. This cannot be enough. There must be more than a mere possibility. As in our Title VII threat determinations, the impact must be "real and imminent." If a bald assertion by an agency that release of certain information would harm its ability to carry out its function, the FOIA would be gutted. Certainly case law does not support the position that an agency can maintain confidentiality on whatever documents it might wish.⁵

Because the expenditure would be required to be released pursuant to a FOIA request by an absolute stranger to the proceeding, there is no justification for the Commission to interpret its rules in such a fashion as to deny use of such information by one the parties. Moreover, the clear language of Rule 201.6 provides that information will not be designated business confidential if the Commission is required by law to disclose such information.

5. In *Green v. Dept. of Commerce*, 489 F. Supp. 977 (D.D.C. 1980), the district court stated that a good faith assurance of confidentiality cannot be enough to defeat a FOIA request because this would make the Act a nullity.

B. *****

Rule 201.6 permits the Commission to designate as business confidential the profits, losses and expenditures of a firm. A common-sense interpretation of this rule is that it is intended to cover information relating to a firm's ordinary commercial and financial operations.⁶ ***** expenditures which are often the subject of cross examination during trials outside of the Commission's jurisdiction should not fall within any reasonable interpretation. ***** is an extraordinary transaction not related to the firm's ordinary business or financial operations.

C. The Slippery Slope

It has been argued that the release or redesignation of the information relating to the ***** would put the Commission on a "slippery slope." That is, the Commission would be faced with an inordinate number of such requests in the future. Such doomsday predictions seldom come true. Moreover, even if the avalanche occurred, the Commission would not be surrendering its discretion to say "no." Conversely, reversing the ALJ in this case would reverse the trend toward in camera hearings and provide an indication that the Commission expects

6. In *British Airports Authority v. U.S. Dept. of State*, 530 F.Supp. 46 (D.D.C. 1981), the court held in an FOIA appeal that information sought to be withheld under b(4) must fall within the ordinary meaning of commercial or financial.

its regulations to be interpreted in a reasonable manner.

2. Remedy on patent infringement.

After examining ITC precedent with respect to the choice between a limited and general exclusion order, I have come to the conclusion that this case is not appropriate for the issuance of a general exclusion order. A mere unsubstantiated allegation by the complainant that another company, not a party to the proceeding, is also infringing its process patent is not sufficient to justify the "chill" on legitimate trade that may result from a general exclusion order. I therefore recommend the issuance of a limited exclusion order as the remedy for the patent infringement.

In fashioning a remedy our goal should be to balance two competing and legitimate concerns. On the one hand we do not wish to impose unnecessary future monitoring and litigation on petitioners. The great value of a general exclusion order is that it permits a petitioner to have an effective remedy without requiring wasteful serial litigation. On the other hand it poses the danger of excluding imports of products that do not violate the patent. This latter concern is particularly acute in the case of a process patent, such as this one, in which Customs can never learn from a mere examination of the product whether or not it was produced by a process which infringes a patent.

Because of the Commission's concern with the possible

disruption of trade resulting from a general exclusion order, in Spray Pumps⁷ the Commission held that a complainant must prove "both a widespread pattern of unauthorized use of its patented invention and certain business conditions from which [the Commission] might reasonably infer that foreign manufacturers other than the respondents to the investigation may attempt to enter the U.S. market with infringing articles." On the record in this case, I am unable to conclude that either strand of the test has been met.

Determinative factors in analyzing business conditions generally relate to 1) the cost to foreign entrepreneurs of entering the U.S. market with the infringing product and 2) whether there is an established demand and marketing network for the product in the U.S..⁸ Although the relevant demand conditions have been established, little evidence concerning the willingness or ability of other foreign manufacturers to enter the U.S. market has been presented.

The lack of evidence with respect to foreign producers is even more important with respect to the alleged "widespread pattern of unauthorized use." Unlike other cases in which a

7. Inv. No. 337-TA-90, USITC Pub. 1199; 216 U.S.P.Q. 465 (1981).

8. See Spray Pumps, at 18-19.

general exclusion order has been issued by this Commission,⁹ the Commission is faced with only one infringing respondent and a mere assertion by the complainant that another company (Kollross) is also infringing its process patent. Moreover, one of the cases in which a general exclusion order was issued, Multicellular Plastic Film, was decided before the Commission had begun using the limited exclusion order as a remedy.

A letter written by the complainant alleging infringement by non-respondents, without more, is not sufficient to meet the burden placed on complainant to justify a general exclusion order. What more is necessary? Arguably, even with only one respondent, if there were evidence on the record that the respondent was likely to change corporate form to avoid the impact of a limited exclusion order,¹⁰ there might be reason to issue a general exclusion order. Even if such were the case, the Commission must still balance the potential chill to legitimate trade against the benefit to the complainant of the broader order.

In this case, there is some evidence that one non-respondent is producing machines which produce skinless sausage casings.

9. See, e.g., Certain Multicellular Plastic Film, Inv. No. 337-TA-54, USITC Pub. 987 (1979), aff'd sub nom., Sealed Air Corp. v. USITC, 645 F.2d 976 (C.C.P.A. 1981); Amorphous Metals, 337-TA-143 (1984)

10. See Certain Trolley Wheel Assemblies, Inv. No. 337-TA-161 (1984)

The Commission Investigative Attorney and complainant Teepak both assert that Kollross' process was found by the ALJ to infringe complainant's patent. The general counsel's office does not concur with their assessment.

Furthermore, none of the parties to this investigation argued that the respondent Viscofan was likely to resort to subterfuge to undermine the effectiveness of the order. Finally, if Viscofan were suspected of such deviousness, then the Commission is being overly optimistic about the enforceability of the limited exclusion order on the trade secret issue. The remedy for the trade secret misappropriation spans 10 years. The remedy for the patent infringement covers only one year. The likelihood of Viscofan changing its corporate form in order to avoid the effect of the Commission's remedy seems much greater in the trade secret case because of the greater time coverage. However, I find no evidence or argument that Viscofan will change its corporate form to subvert a limited exclusion order.

Because there is no substantiated evidence of either potential infringement by non-respondents or a likelihood that Viscofan will be able to change corporate form undetected, I would recommend a limited exclusion order directed against Viscofan and its successors for its patent infringement because there is nothing to balance against the potential chill on legitimate trade.

This is an initial determination issued by a Commission administrative law judge that the Commission determined not to review. The initial determination has, therefore, become the Commission determination in this investigation on the issue of violation of section 337 and 19 U.S.C. § 1337a. See section 210.53(h) of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.53(h)) and the notice published in the Federal Register on October 11, 1984 (49 Fed. Reg. 39925).

OPINION

This consolidated patent and trade secret based § 337 investigation derives from the Commission's institution of two separate investigations. Investigation No. 337-TA-148 was based on the complaint of Teepak, Inc. and its parent, Bufpak Corp., alleging that respondent Viscofan, S.A. was in violation of § 337 by reason of its importation into and sale in the United States of skinless sausage casings made in Spain in accordance with certain processes which infringe four United States patents owned by Teepak, causing substantial injury to the domestic skinless sausage casings industry. All but one of the patents, the '484 patent covering the Arnold process for shirring sausage casings, were withdrawn by Teepak prior to the hearing. (Findings of Fact 2, 3, 7, 8; See p. 9, supra).

Investigation No. 337-TA-169 was based on the complaint of Union Carbide Corp., alleging that the respondent Viscofan was in violation of § 337 by reason of its importation into and sale in the United States of the same skinless sausage casings manufactured in accordance with processes which infringe two different United States patents and embody misappropriated trade secrets all owned by Union Carbide, causing substantial injury to the relevant domestic skinless sausage casings industry. Respondent Hygrade Food Products Corp. moved to intervene in the first investigation, and was named a party respondent by the Commission in the second. The two patents were withdrawn by Union Carbide and respondent Hygrade was terminated prior to the hearing. (Findings of Fact 4-6; see pp. 7-9, supra).

The products involved in this investigation are small caliber cellulose sausage casings (skinless sausage casings) which are used by meatpackers to make sausage products, including frankfurters. The manufacture of

sausage casings broadly involves several intricate stages requiring close quality control. These stages include the preparation of viscose from natural cellulose fibers, regeneration and extrusion of the cellophane-like product into tubular flat stock and the finishing process known as shirring. (Findings of Fact 9-19).

The Arnold '484 process patent (the suit patent) teaches an improvement in the shirring process which basically involves helically pleating and compressing lengths of casing flat stock into short, self-supporting tubular sticks. The improved shirring process facilitates utilization of the casings in the automatic sausage-stuffing equipment used by large United States meat packers for making skinless sausages. The meat packing procedure entails sliding a stock of shirred casing over the stuffing tube of a sausage stuffing machine, pumping a meat emulsion into the stick which fills the casing, twisting the casing at intervals to define individual sausages, and cooking the sausages, after which the casing is normally removed, resulting in a product sold as "skinless" sausages or frankfurters. (Findings of Fact 11, 19).

The trade secrets at issue owned by Union Carbide cover every phase of casing manufacture, from composition of the viscose, to extrusion of the tubular casing, and finishing with shirring operations. These asserted trade secrets concern several specific aspects in each stage of production, including standards and specifications, and the design and construction of particular pieces of machinery and equipment.

The skinless sausage casing market in the United States is oligopolistic, with Union Carbide and Teepak as the dominant participants,

Validity of the '484 Patent

Although the issue of the validity of the suit patent under 35 U.S.C. § 112^{1/} was raised by respondent Viscofan in its prehearing statement and in its post-hearing memorandum, the record in this investigation is devoid of any direct evidence on this issue, as to which respondents have the burden of proof under the statutory presumption of patent validity. (See Viscofan PHS, p. 13; PB pp. 14-15). 35 U.S.C. § 282.

Nevertheless, in its post-hearing brief, Viscofan challenges the validity of the suit patent on the alleged grounds that claim 1 of the patent is so vague and indefinite "as to make it impossible to determine its nature, thus rendering it invalid under 35 U.S.C. § 112." The only rationale presented in support of this allegation is that "different and contradictory interpretations have been offered for 'applying a plurality of shirring forces ... continuously' and for 'a substantially continuous helical line.'" Viscofan relies on the legal authority of United Carbon v. Binney & Smith, 317 U.S. 228 (1942), wherein the Supreme Court struck down a patent under § 112 because some of the patent claims were so indefinite as not to give the notice required by the statute.

The § 112 requirement of definiteness in patent claims is essentially a requirement for precision and definiteness of claim language so that the claims make clear what subject matter they encompass and thus what the patent precludes others from doing. Application of Spiller, 182 U.S.P.Q. 614 (C.C.P.A. 1974). The requirement is designed both to protect the

^{1/} 35 U.S.C. § 112 provides in pertinent part:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

patentee and to encourage experimentation in areas not covered by the patent. Courts are required to reconcile these conflicting concepts. Corning Glass Works v. Anchor Hocking Glass Corp., 153 U.S.P.Q. 1 (3rd Cir. 1967), cert. denied 389 U.S. 826 (1967). Two primary purposes are served, namely, that those skilled in the art must be able to understand and apply the teachings of the invention and enterprise, and that experimentation must not be discouraged by creation of an area of uncertainty as to the scope of the invention. On the other hand, the policy of the patent system granting protection to valid inventions must not be defeated by according protection only to those patents capable of precise definition. Georgia-Pacific Corp. v. U.S. Plywood Corp., 118 U.S.P.Q. 122 (2d Cir. 1958), cert. denied 358 U.S. 884 (1958).

Here, Viscofan charges that claim 1 is ambiguous and inconsistent as interpreted by complainant Teepak insofar as complainant would have it cover not only Teepak's shirring process, which truly applies shirring forces "continuously at spaced points around the periphery of the casing and ... along a substantially continuous helical line"; but also Viscofan's stepped right angle static head machine, which has sets of two paddle teeth separated by a space and so shaped and positioned that the elevated portion of one tooth mates with the elevated portion of another tooth on the next wheel. (Findings of Fact 49, 50, 53, 54, 60, 61). Viscofan contends that the resulting application of shirring forces, in a series of planes or steps, as the casing in contact with the teeth jumps or moves from one elevated tooth to the next, does not meet the requirement of claim 1 that the shirring forces apply continuously around the periphery and along a substantially continuous helical line. This contention, which is also part of Viscofan's noninfringement argument, is not well founded or supported by the record.

In the first place, Viscofan's contention erroneously assumes that no shirring force is applied to the casing in between the elevated portions of the mating teeth in successive wheels. Although the primary shirring forces are applied by the elevated portions, some forces are also applied by the tooth area in between the elevated portions. (Story, Tr. 1422-29; Cory, Tr. 137-40). Indeed, at the hearing Mr. Story drew a diagram defining the spaced-apart shirring force points which are positioned at an angle to the axis of the casing movement and showed how these points directly coincide with the shirring force points on the diagonal lugs (teeth) illustrated in the suit patent. (Findings of Fact 97-99).

Viscofan persists in asserting that the "wear patterns" on the stepped right angle teeth in its process indicate that the forces are applied along the outer surface or the foremost surface of the first tooth elevated section for a distance of little more than halfway across the tooth and then are shifted to the elevated portion of the second tooth; that the forces are thus applied by the stepped right angled teeth in a series of steps with a discontinuity in the middle of each tooth where the force changes from the front surface of the first tooth elevated portion to the front surface of the second tooth elevated portion. (Findings of Fact 93-96). The only evidence supporting this contention is the deposition testimony of Luis Michelena, who indicated that wheels have to be replaced or refaced because of wear on the lugs at their point of contact with the casing. (Finding of Fact 92). But this wear pattern is inconclusive, since the used Teepak wheels in evidence also show wear at the respective elevated portions of the teeth and little wear in between (TCPX 69). Mr. Story concluded that Viscofan's stepped right angle wheels would show the same wear pattern. (Story, Tr. 1428-29; VPX 3).

Viscofan further contends that claim 1 of the suit patent is ambiguous because the term "substantially continuous helical line" is interpreted by Teepak as covering "a series of steps," which, in Viscofan's view, describes the application of shirring forces in its static head machine and which is "completely foreign to the patent specifications and ... reads on the prior art." (Viscofan's Response to Complainants' Post-Hearing Statements, p. 10). In short, Viscofan seeks to identify the form of application of shirring forces in its process with that described in the prior art Blizzard and Matecki patents based on the similar shirr patterns in the pleats of the casing produced by these processes, which Viscofan describes as "a discontinuous spiral with many breaks and intervening folds." (Viscofan's PB, p. 8).

This alleged identity between Blizzard's and Viscofan's shirring processes in the application of shirring forces is not sustained by a preponderance of the evidence of record. Comparison of the photographs of cross-sections of the shirred casings produced by each process, considered in the context of the Blizzard and Arnold patents, and evidence of differences in the physical relationship and interaction between the wheel lugs or teeth and the casing in the processes taught by these two patents, shows that the casing pleat patterns made by Viscofan's shirring process bear a closer resemblance to the casing shirred by complainants' process than to the casing shirred by Blizzard's process. Specifically, photographs TCX 5 and 6 of Viscofan's shirred casing show a mixture of major (long) pleats and fairly uniformly distributed minor (short) pleats, comparable to complainants' shirred casings shown in photographs TCX 7 and 4, respectively. The pleat patterns shown in these photographs of Viscofan's and complainants'

casings are distinguishable and distinctly different from the greater number and uneven distribution of minor pleats (i.e., "short breaks and intervening folds") shown in photograph TCX 3 of the Blizzard/Matecki shirred casing. Even though Viscofan's casing, as depicted in photographs TCX 5 and 6 also appears to have fewer major pleats and more unevenly distributed minor pleats than complainants' casing as depicted in TCX 7, there is a perceptible difference, at least in degree, between Viscofan's and Blizzard's casings in these respects, as well as an even more pronounced appearance of compactness in Viscofan's casing compared with Blizzard/Matecki's casing. (Findings of Fact 95, 96; TCX 3).

These perceptible differences in the casings produced by the Blizzard and Viscofan shirring processes reasonably reflect and are consistent with Teepak's argument that claim 1 of the suit patent, fairly interpreted, adequately defines and gives notice of the nature of the "substantially continuous helical line" taught and required by the suit patent. Indeed, the suit patent itself specifies that the improvement in the shirring process taught is the application of shirring forces "continuously around the periphery of the casing so that the casing would be formed into a true helical pleat with substantially no intervening folds occurring at pleats between the application of successive shirring forces." (TCX 1, col. 2, ll. 36-43). The patent specification reiterates and explains the continuous helical line teaching:

The angle of the shirring lugs or other shirring force-applying means is such that as said lugs or means are moved successively into engagement with the casing they engage the casing along a substantially continuous helical line and thus form substantially continuous helical pleats in the casing. (Col. 3, ll. 20-25).

....

This invention is based upon my discovery that synthetic sausage casings can be shirred in a more compact straight strand having a more satisfactory distribution of the shirred pleats by application of shirring forces to an inflated casing along a substantially continuous helical line around the casing. (Col. 4, ll. 15-21).

....

The application of shirring forces by shirring lugs is along a substantially helical line around the periphery of the casing and causes the casing to be shirred in substantially continuous helical pleats. (Col. 6, ll. 39-42).

Viscofan's reliance on the previously referenced United Carbon case is likewise misplaced. United Carbon is distinguishable from this case in that the former involves not process, but product claims expressed in terms of "inaccurate suggestions of the function of the product, and fall afoul of the rule that a patentee may not broaden his claims by describing the product in terms of function." United Carbon v. Binney & Smith, 317 U.S. at 234. In addition, the specification in United Carbon, unlike those in the case at bar, was not helpful in clarifying the claims or curing the defects. Id. at 236.

Having found that the application of suit patent claim 1 to Viscofan's shirring process is reasonable and consistent with the claims and specification of the suit patent and its prosecution history and the pertinent evidentiary record, I further find that respondent has not sustained its burden of proving claim 1, or any other claim, of the suit patent invalid for indefiniteness under 35 U.S.C. § 112. (See generally, Findings of Fact 29-105).

This conclusion is reinforced by the fact that the suit patent issued after a PTO rejection under § 112 was overcome. During prosecution of

the suit patent, original claim 1 was rejected by the PTO examiner under 35 U.S.C. § 112 as being vague and indefinite in that the claim words "force is sequentially and continuously applied" appeared to be contradictory. (VRX 470, first Office Action dated 9/24/68). In a subsequent amendment, the words "including applying a plurality" replaced the connective words preceding the words "shirring forces" in line two of present claim 1, and applicant's attorney pointed out

that the process claims in this case are generally allowable over the prior art for the same reasons submitted in support of the allowance of the parent case.^{2/} The prior art does not disclose applying a plurality of shirring forces sequentially and continuously at spaced points around the periphery of the casing and progressively longitudinally of the casing along a substantially continuous helical line.

(VRX 470, Amendment and Remarks dated 11/26/68). The presumption of validity of a patent is greatly strengthened when the inventor's claims are subjected to close and careful scrutiny in the PTO, and especially when the same statutory defenses to patent validity have been considered and rejected by the PTO. Modern Products Supply Co. v. Drachenborg, 68 U.S.P.Q. 10 (6th Cir. 1945), cert. denied 327 U.S. 806 (1946); Hunt v. Armour & Co., 88 U.S.P.Q. 53 (7th Cir. 1951).

^{2/} The parent case is U.S. Letters Patent 3,454,982, Serial No. 564,961, issued August 19, 1969, from which the suit patent was divided. Claim 8 in the parent patent application (claim 1 in the suit patent) was initially rejected by the PTO examiner under 35 U.S.C. § 103 as being unpatentable over the Ziolkow '398 patent for reasons (subsequently overcome) not pertinent here, but discussed under patent history, infra. (See Findings of Fact 67-70).

Infringement of the '484 Patent

Complainant Teepak alleges that respondent Viscofan literally infringes the claims of the suit patent by the unauthorized importation and sale in the United States of skinless sausage casings made with Viscofan's static head and/or rotating head shirring machines which utilize Teepak's patented process for shirring sausage casings. 35 U.S.C. § 271.^{3/}

The suit patent contains five claims, of which Teepak alleges claims 1, 2, 3, and 5 are infringed. However, the parties stipulated claim 1 as the representative claim for the purposes of hearing and adjudication. (Prehearing Conf. Tr. 280). Complainant, as the proponent, has the burden of proof on this issue. The relevant suit patent claims provide as follows:

1. A process for shirring synthetic sausage casings including applying a plurality of shirring forces sequentially and continuously at spaced points around the periphery of the casing, and progressively longitudinally of the casing, along a substantially continuous helical line.
2. A process as defined in claim 1 in which the shirring forces are applied in discrete segments of a helical line.
3. A process as defined in claim 2 in which the shirring forces are applied equiangularly around the periphery of the casing being shirred, each of said shirring forces being applied at an angle to the direction of longitudinal movement of said casing to cooperate in applying said shirring forces along said helical line.
5. A process as defined in claim 1 in which the casing is inflated prior to application of the shirring forces thereto.

(TCX 1).

^{3/} 35 U.S.C. § 271 provides in pertinent part as follows:

- (a) ... whoever without authority makes, uses or sells any patented invention, within the United States during the term of the patent therefor, infringes the patent.

Prosecution History of the Suit Patent

The '484 patent issued August 19, 1969, as a division of inventor-applicant Lionel C. Arnold's original patent application filed July 13, 1966. (Finding of Fact 29). There were 14 claims in the parent application, of which claims 1-7, relating to the process for shirring sausage casings, were divided out into the suit patent pursuant to the restriction imposed by the PTO examiner. (Finding of Fact 67). Claims 8-14 of the parent application related to the apparatus for shirring sausage casings, of which claim 8 reads as follows:

An apparatus for shirring synthetic tubular casing comprising a plurality of means to apply a shirring force to casing, said force-applying means being positioned equiangularly around the periphery of the casing being shirred, and said force-applying means engagable with the casing to apply a shirring force along a substantially continuous helical line.

(Finding of Fact 68).

Original claim 8, among others in the parent application, were rejected by the PTO examiner under 35 U.S.C. § 103 as being unpatentable over the Ziolkow ('398) patent. The examiner stated that "[i]t is obvious from the position of the helical blades, as seen in Figures 3, 24 and 25, that the shirring forces will be along a continuous helical line." (Findings of Fact 68-69). The applicant successfully overcame this objection to original claim 8 by inserting the words "substantially continuous" before the words "shirring force", eight words from the end of the claim. (Finding of Fact 70). In his accompanying remarks, applicant's attorney took the position that the Ziolkow reference did not anticipate the applicant's invention or provide a basis from which the invention would be obvious to one of ordinary skill in the art. He further explained in pertinent part as follows:

... the invention disclosed and claimed in this application involves the application of shirring forces along a substantially continuous helical line and involves the application of substantially continuous shirring forces.... [T]he shirring apparatus of Ziolkow involves the use of shirring wheels having soft rubber flexible 'fingers' of long bending radius. The shirring 'fingers' of Ziolkow, while being disposed at an angle or a partial helix, wipe along the mandrel and do not enclose the casing peripherally. The views shown in Figs. 1, 2 and 3 of Ziolkow show shirring 'fingers' which are obviously flat at their periphery rather than forming a circular enclosure.... [T]he shirring 'fingers' of Ziolkow probably do not enclose more than about half the periphery of the casing being shirred. The apparatus of Ziolkow therefore involves the application of discontinuous shirring forces which may be partially helical in application but does not involve the application of shirring forces which are substantially continuous, i.e., around the entire periphery of the casing being shirred, and which are applied along a substantially continuous helical line.

(VRX 470, Remarks dated September 19, 1968). Following this amendment to original claim 8, among others, the parent patent issued on July 15, 1969 as the '892 patent. (VRX 469). The divisional '484 patent issued August 19, 1969. (Finding of Fact 73).

In its brief, Viscofan asserts that the foregoing Amendment and Remarks pertinent to original claim 8 in the parent patent, which claim has not divided out to become part of the suit patent, "defined language and limitations common in the claims in both the parent and divisional." (Viscofan PB, p. 4). This is not strictly true, since original claim 8 was never asserted as, and is not now, a claim of the suit patent. The reference to shirring forces in claim 1 of the suit patent reads "a plurality of shirring forces sequentially and continuously at spaced points around the periphery of the casing," etc. The only amendment to claim 1, as previously discussed under the validity section of this Opinion, supra, was the word "plurality." Yet Viscofan suggests that the above quoted remarks of

applicant's attorney, which resulted in overcoming the PTO examiner's rejection of original claim 8, among other claims, of the parent patent, has worked some form of file wrapper estoppel, precluding Teepak from arguing the applicability of claim 1 of the suit patent to Viscofan's process for manufacturing skinless sausage casings.

The apparent rationale of Viscofan's file wrapper estoppel argument, which is not easily grasped, is that the patent applicant, is estopped because it argued to restrict its inventive improvement to the substantially continuous application of shirring forces to the casing being shirred. The applicant argued this point in order to overcome the PTO's objection that the "substantially continuous helical line" provision in claim 8 of the parent patent was obvious in view of the position of the helical blades depicted in Ziolkowski's patent on an apparatus for shirring casing, which indicated that the shirring forces would be applied along a continuous helical line. The legal effect of the subsequent amendment and remarks by applicant's counsel with respect to claim 8 was simply to add the requirement that application of the shirring force along a substantially continuous helical line of the casing had to be "substantially continuous" in a manner distinguishable from Ziolkowski. This is accomplished by the use of lugs on the shirring wheels, which were so curved and positioned as to enclose the entire periphery of the casing being shirred, thus assuring the application of substantially continuous shirring forces on the casing. (VRX 470).

It is difficult to see how this requirement added to claim 8 of the parent patent can be interpreted to affect the meaning of claim 1 of the divisional suit patent so as to exclude Viscofan from its purview. Claim 1 has always

required that the shirring forces apply "sequentially and continuously at spaced points around the periphery of the casing, and progressively longitudinally of the casing, along a substantially continuous helical line."

Assuming that the amendment and remarks pertinent to apparatus claim 8 of the parent patent may be considered in construing the scope and effect of process claim 1 of the suit patent, it would be reasonable to construe the "continuously" in claim 1, referencing force application, as meaning "substantially continuously." Although the addition of this requirement in claim 8 of the parent patent was intended to reflect the improved shirring technology for maximizing the continuous application of shirring forces to the casing by more completely enclosing the casing with force-applying shirring lugs, the addition of the word "substantially" to the already existing word "continuous" in claim 1 of the suit patent conceivably could lead to a broader construction being placed on the word "continuous".

Contrary to the thrust of Viscofan's argument, such a construction would tend to be more inclusive, rather than exclusive, of processes for shirring sausage casings. In any event, the force application provision of claim 1 of the suit patent, as is or as vicariously amended, cannot reasonably be construed to exclude a shirring process such as Viscofan's, which clearly embodies a means of force application, curve-toothed shirring lugs entirely enclosing the casing, no less continuous than the process taught by the suit patent prosecuted by applicant's counsel before the PTO. (Findings of Fact 57-62, 74-82, 87-90).

The Invention of the Arnold Patent

The Arnold invention taught by the suit patent has the principal object of improving the method of applying shirring forces to the sausage casing being shirred so as to produce a more compact, straight and rigid stick of shirred casing. This type of shirring met the need of the meat-packing industry for a better quality stick to be used with "Frank-A-Matic" automatic meat-stuffing machines. (Findings of Fact 40-42, 46-50).

The shirring of sausage casings in order to stuff the casings with meat is an old and fairly complex art, as indicated by the prior art patents considered by the PTO during prosecution of the suit patent. (VRX 470). The Arnold invention can best be understood in terms of the improvement it teaches in the shirring force application over the prior art in the Blizzard '713, '715 and '201 patents, and the Matecki '949 and '574 patents, which were in commercial use prior to Arnold's invention. (Findings of Fact 30, 32-39).

The Blizzard patents disclose a process of shirring an inflated casing positioned around a mandrel. The shirring is accomplished through the application of force from a series of lugs on two or more belts positioned around the casing. The belts are aligned so that lugs of each belt are positioned to correspond to the spaces between the lugs on the other belt(s). The lugs are spaced apart along the inflated casing a distance about equal to the width of the lugs and their staggered relation causes the shirring action to take place sequentially and continuously. ('714 patent, TCX 2a, col. 8, ll. 1-6). This application of shirring force to opposite sides of the casing over relatively short distances compared to

the diameter of the casing produces a shirring pattern of major and minor pleats in a generally concave configuration which are substantially regularly formed from end to end. (TCX 2a, col. 8, ll. 20-25). To interlock the successive pleats or folds so that the shirred casing is substantially rigid, the shirred casing is subsequently compressed in a turret consisting of four mandrels and a compressor-doffer unit, in accordance with the Korsgaard '654 patent. (TCX 2a, col. 1, ll. 23-53; col. 8, ll. 8-19).

The Matecki patents disclosed a slight modification of the shirring process set forth in the Blizzard patents. Matecki uses shirring wheels instead of belts mounted with a series of shirring teeth with three distinct configurations located in repeating sequence around the peripheries of the respective shirring wheels. The contact surface of the teeth, which form an eccentrically gyrating passage of smaller cross-sectional area than the inflated casing, are saddle-shaped. When the teeth on the synchronously rotating wheels mate together at said passage they circumferentially grip and indent successive discrete sections of the casing. (TCX 2d, col. 2, l. 68 - col. 3, l. 11; TCX 1, col. 2, ll. 10-21). The Matecki shirring process resulted in a shirred casing pleated "into a uniform helically pleated shirred tube," with the major pleat, i.e., the transverse diagonal ridge (83 in Fig. 12, TCX 2d) "indicative of the substantially helical shirred pattern." (TCX 2d, col. 3, ll. 11-13; col. 7, l. 65-70).

As recognized in the suit patent, the Blizzard and Matecki shirring processes have produced casing "pleated in a form approximating a spiral pleat extending continuously around the casing," which have commercial use. But the casings shirred by these processes have shown irregularities in the formation of their casing pleats. These irregularities are attributable to

a discontinuity in the application of shirring force to the casing. The force was "intermittent and spaced around the periphery of the casing ... at spaced intervals." To correct these disadvantages, the Arnold invention seeks "to develop a shirring method and apparatus in which a shirring force can be applied continuously around the periphery of the casing so that the casing would be formed into a true helical pleat with substantially no intervening folds occurring at pleats between the application of successive shirring forces." (TCX 1, col. 2, ll. 22-43). More importantly, shirred sausage casings produced with the Arnold process comprise "a more compact straight strand having a more satisfactory distribution of the shirred pleats" (TCX 1, col 4, ll. 16-21). A more compact straight strand or stick of shirred casing can be more efficiently handled by the automatic feeding and chuck mechanism of the Frank-A-Matic meat-stuffing equipment. (Arnold, TCX 33, pp. 7-9; Story, TCX 34, p. 14).

The Arnold invention features the application of shirring forces by means of a plurality of shirring wheels positioned around the casing being shirred which have a plurality of lugs positioned at an angle such that rotation of the shirring wheels will effect the application of shirring forces to the casing along a helical line. (TCX 1, col. 1, ll. 65-72). In summarizing the invention, the suit patent states:

The angle of the shirring lugs or other shirring force-applying means is such that as said lugs or means are moved successively into engagement with the casing they engage the casing along a substantially continuous helical line and thus form substantially continuous helical pleats in the casing. The formation of continuous helical pleats results in shirred strands which are straighter and about 5-10% shorter than those previously produced.

(TCX 1, col. 3, ll. 19-27).

The continuous helical pleats and compactness in the shirred casings produced by the Arnold process are evident in enlarged photographs of cross sections of strands depicting the pleat pattern, especially when compared with similar cross-sectional photographs of a strand produced by the Matecki process. The Arnold strand photograph (TCX 4) clearly shows more continuous (major or long) helical pleats and a better distribution of the secondary (minor or short) pleats with a resulting higher degree of compactness than the Matecki strand photograph (TCX 3), thus demonstrating the effect of the Arnold invention. (Finding of Fact 49). In the Matecki strand, for example, the secondary pleats are predominately at the base in the area of the mandrel, and the major pleats tend to overlay the minor pleats at the outer level of the casing. (Finding of Fact 51). This bunching of the minor pleats toward the base makes for less overall compactness of the Matecki strand in comparison with the Arnold strand, in which there appears to be more major strands, with the minor strands more evenly distributed between them. (Findings of Fact 53-54). This non-uniform or irregular density in Matecki results from the mode of application of shirring force to the casing in that process. The transverse indentations formed by the shirring wheel teeth at successive 120 degree intervals around the periphery of the casing develop low density exterior areas of pleats which do not overlap and higher density interior areas of pleats which do overlap. (TCX 2d, Fig. 10; col. 6, l. 64; Arnold, TCX 33 pp. 5-6; Story, TCX 34 pp. 5-6; TCX 3).

As set forth in representative claim 1 of the suit patent,^{4/} the Arnold invention comprises a process for shirring sausage casings, including applying a plurality of shirring forces sequentially and continuously at spaced points around the periphery of the casing, and progressively longitudinally of the casing, along a substantially continuous helical line. (TCX 1, col. 10, ll. 13-17). The apparatus used to practice the patented process includes saddle-shaped shirring lugs situated diagonally on the periphery of three cooperating shirring wheels or endless belts, each lug having a beveled, ridge-like tooth at each end. (TCX 1, Fig. 1, 2). The shirring lugs are disposed at an angle so that as the belt moves or the wheels rotate, the teeth of successive lugs are brought into engagement with the inflated casing, making helical indentations in and around the casing. (TCX 1, col. 8, l. 58). These successive indentations in the casing operate to maintain a substantially continuous indent or trough having the general form of a helix. (TCX 1, col. 8, ll. 54-59).

As seen in Figure 8 of the suit patent, the shirring wheel lugs or teeth (152) are successively brought into engagement with the casing. The teeth are set at an angle to the axis of the respective wheels, and a tooth of the uppermost wheel in the drawing defines a portion "a" which is shown in essentially mating relationship with a corresponding portion "a" of a

^{4/} Dependant claim 2 emphasizes that the shirring forces are applied "in discrete segments of a helical line," i.e., by and through the shirring lugs sequentially at spaced fronts on the periphery of the casing, progressively and longitudinally of the casing. Dependent claim 3 refers to the fact that the shirring force applied by each lug as it engages the casing is applied at an angle to the direction of longitudinal movement of the casing. Dependent claim 5 refers to the inflation of the casing prior to application of any shirring forces.

tooth on the lower right-hand wheel. The latter tooth also defines portion "b" which, upon continued rotation of the wheels, will mate with a portion "b" on a tooth of the lower left-hand wheel. That tooth, in turn, defines a portion "c" which will eventually come into mating relationship with a portion "c" of the next tooth on the uppermost wheel. (Finding of Fact 88). In this way, the shirring wheels in Arnold's invention, as depicted and taught in the suit patent and as commercially employed by complainants, engage the casing at successive spaced points "a", "b," and "c." This achieves helical indenting of the casing in the formation of the shirred sticks. Complainants practice the Arnold process as patented since all skinless sausage casings produced and sold by Teepak and Union Carbide in the United States are manufactured in accordance with the claims of the suit patent. (TCX 302, p. 14; SX 4). However, since the claims of the suit patent are process or method claims, they are not limited to any particular form of apparatus. (TCX 1, col. 3, l. 27-32). In re Prater & Wei, 162 U.S.P.Q. 541, 549 (C.C.P.A. 1969).

Viscofan's Shirring Process

Viscofan uses basically two processes for shirring sausage casings.^{5/} The first or static head process, in use when this investigation was instituted, involves a shirring apparatus wherein three shirring wheels are mounted for rotation on a stationary or static support in essentially the manner shown in Figure 8 of the suit patent. The shirring wheels are located equiangularly (at 120 degree intervals) around a mandrel, and the

^{5/} Late in 1983, Viscofan developed a third shirring process which operates in essentially the same manner as the process in use when the investigation began. The shirring wheels in this third process are mounted equiangularly on a stationary or static head in the manner shown in Figure 8 of the suit patent and are interchangeable with the wheels of the first process. (Findings of Fact 57-62).

tubular casing is fed along this mandrel to a shirring location for engagement by the lugs around the periphery of the respective wheels. To facilitate this engagement, the casing is inflated. (Finding of Fact 57). The lugs of each wheel are at right angles to the center line of the casing and each lug has a raised or elevated tooth at one or the other end of the lug. The lugs are in groups of two, which are positioned side by side, with an indented space between each set of two teeth. These wheels mate such that one elevated position of a composite tooth on one wheel aligns with the elevated position on the other side of a composite tooth on the next wheel. As a result, a 120 degree flat surface consisting of the beveled ridges of the mating teeth at right angles to the casing, sequentially and continuously contacts the casing at any particular time. (Findings of Fact 87, 89, 90).

The second or rotating head process, now allegedly used for the production of sausage casings for the United States market, utilizes four rotating shirring wheels or rollers mounted around the mandrel at right angles to the axis of the mandrel. Simultaneously, the head on which the wheels are mounted rotates around the axis of the mandrel. There are saddle shaped (concave, arcuate grooved) lugs or vanes at spaced intervals on the periphery of each wheel, with elevated portions or teeth at both ends of each lug. Since each lug engages over 90 degrees of the circumference of the casing as it passes along the mandrel, the wheels are staggered so that their respective teeth pass sequentially one after the other. (Findings of Fact 75-81). The operation of this process is essentially the same as that described in the Kollross '295 patent. (Findings of Fact 83, 84).

Infringement Analysis

In considering whether a product or process directly or literally infringes a patent, resort must be had in the first instance to the words of the claims. If the allegedly infringing device or process falls squarely within the literal language of the claims, a case of direct infringement is established. Leesona Corp. v. Varta Batteries, Inc., 213 U.S.P.Q. 222 (D.C.N.Y. 1981); Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 607 (1950). Direct infringement of a method or process patent requires, at least, that the infringers have performed the principal steps of the process claims. Laminex, Inc. v. Fritz, 183 U.S.P.Q. 265 (D. Ill. 1974). In considering whether there is infringement of a patent, the patent claims are to be read in light of the invention disclosed, and are not to be given a construction broader than the actual teachings of the patent as shown by the specification and drawings. Vischer Products Co. v. National Pressure Cooker Co., 83 U.S.P.Q. 413 (7th Cir. 1949); United States v. Adams, 383 U.S. 39, 49 (1965).

A determination of whether Viscofan's shirring processes infringe claim 1 of the suit patent requires close analysis of how the processes actually work or are employed in the operation of Viscofan's static head and rotating head shirring machines, and particularly how the shirring forces are applied in those machines. In terms of claim 1, the evidentiary record clearly establishes that the relevant processes employed by Viscofan for shirring synthetic sausage casings include application of a plurality of shirring forces (e.g., shirring wheels and lugs with teeth) sequentially and continuously at spaced points around the periphery of the casing, and progressively and longitudinally of the casing. (Findings of Fact 86, 100).

However, Viscofan contends that the shirring forces in its processes are not applied in exactly the same way nor "along a substantially continuous helical line" within the meaning and intent of the claim read in the context of the patent specification. Viscofan argues that the suit patent and the testimony of expert witnesses establish the close, perhaps causal relationship between applying shirring forces in a substantially helical line and "essentially continuous helical pleats." (TCX 1, col. 18-23; Story, TSCX 34, pp. 6-8; Arnold, TCX 33, pp. 15-16). It is Viscofan's position that the shirring forces in its processes are not applied along a "substantially continuous helical line" as required by claim 1 because the casings shirred in accordance with Viscofan's processes display (1) discontinuous and irregular major pleat patterns with (2) many more minor pleats intervening between the major pleats, which (3) are not in Z patterns. Viscofan further argues that the wear patterns on the shirring teeth of Viscofan's static head wheels show that forces applied around the periphery of casing are intermittent, with breaks or gaps due to the stepped right angle configuration of the teeth on the lugs, which is different from the straight diagonal teeth on the Teepak Arnold lugs. (Findings of Fact 93-95).

As previously discussed under patent validity, supra, Viscofan's pleat pattern argument is not sustained by a comparison of the photographs of cross-sections of the pleating of sausage casings shirred by the Viscofan, Arnold and Matecki/Blizzard processes. Although the two Viscofan casing cross-section photographs (TCX 5, 6) do show more minor pleats and short folds than the Teepak/Arnold casing and Teepak/Screw Shirred cross-section photographs (TCX 4, 7), the former also shows a more even distribution of minor pleats which are not bunched at the base near the mandrel, more

compactness and more major pleats than the Matecki casing cross-section photograph. (TCX 3). Indeed, the pleat pattern shown in Viscofan photograph TCX 6 and Teepak Arnold photograph TCX 4 are practically indistinguishable. The alleged "Z patterns" in the minor pleat formations are not readily discernible in either the Viscofan or Teepak cross-sectional photographs, and even if they were clearly visible, they would carry little or no probative weight as neither the suit patent claims or specifications make any reference to such patterns as indicative of a substantially continuous helical line.

Similarly, Viscofan's teeth wear pattern argument is not well founded because it is based on an erroneous perception or distortion of the application of shirring forces effected by the different configuration of the lug teeth on its shirring wheels. Although the step-angled lug configuration in Viscofan (VRX 3) appears physically quite different from the diagonal lug configuration in Teepak Arnold (TCPX 69), the shirring force they effect is very similar since it is applied sequentially and continuously at practically the same spaced points. (Findings of Fact 90-94). This is so because in both cases the two bevel-ridged teeth on each lug are staggered for mating with another tooth/lug on a cooperating wheel, i.e., the teeth are diagonally opposite each other on the Viscofan lug, and in Teepak Arnold the entire lug is diagonal to the axis of the wheel, with a beveled-ridge tooth at each end of the lug and a grooved trough in between. The force applied to the casing by the lugs in both processes would primarily be at the leading edges of the diagonally positioned teeth, with some wear to be expected in between them. (Story, Tr. 1424-49; Cory, Tr. 137-40).

More importantly, the elevated teeth on the lugs of both the Viscofan static head and Teepak Arnold processes make successive indentations around the periphery of the casing at angularly spaced points. Since the shirring wheels of both processes are timed so that the teeth of one lug mate with teeth of an adjacent lug, the resulting application of force extends along a substantially continuous helical line. (Story, Tr. 1413-17, 1421-32; TCPX 76; TCX 1).

Viscofan's rotating head machine process also applies successive angular indentations to the casing along a substantially helical line. Each of the four shirring rolls supports a plurality of vanes or lugs which are designed for direct engagement with the inflated casing being delivered to the shirring head around a mandrel. (Findings of Fact 75, 76). This mandrel corresponds in function with the mandrel in Arnold (TCX 1, Fig. 8), and the vanes of Kollross^{6/} perform in the manner of the lugs in Arnold. (Findings of Fact 83, 84). The rotating head apparatus provides a shirring action involving application of the vanes, one after another, to the casing. Since each tooth or vane in a rotating head machine is moving along the axis of the casing while simultaneously rotating around that axis, each vane necessarily follows a helical path of movement.

Viscofan's principal non-infringement argument is that its static head machine, at least, practices the Blizzard/Matecki^{7/} shirring process

^{6/} The Kollross '295 patent (TCX 2g) and the physical model of a Kollross rotating head machine (TCPX-70) reasonably illustrate and describe the operation of the Viscofan rotating head machine. Indeed, the Kollross patent has the purpose of forming a shirred stick with a "helicoidally running main fold." (Findings of Fact 83, 84).

^{7/} The prior art Matecki patents (TCX 2d and e) comprise an improvement on the Blizzard system. (Clement, Tr. 1448; Arnold, TCX 35, pp. 5-6).

which, as previously discussed, is distinctly different from the Teepak Arnold shirring process in that a relatively intermittent rather than continuous shirring force is applied. Although Viscofan could practice the Blizzard process by using the Kollross rotating head machine in static condition (i.e., without rotating it), it has chosen not to do so, at least not for importation into the United States. (Dudzik, Tr. 1101-02).

There is substantial evidence of record that Viscofan is practicing the Teepak Arnold process rather than that of Blizzard/Matecki. As previously noted, the Teepak casing produced under the Arnold process and the Viscofan casing produced under its static head and rotating head processes all have substantially uniform density, i.e. compact, evenly distributed pleats, whereas the Blizzard/Matecki casings have irregular, non-uniform density (TCX 3) which is commercially less desirable. The mal-distributed, non-uniform pleat pattern in Blizzard/Matecki shirred strands is caused by the successive application of shirring forces transversely by one or a pair of lugs over a wide angle, interrupted intermittently at 120 degree intervals, when the next lug or lugs reapply force over a wide angle. (Arnold, TCX 33, p. 9).

Viscofan's reliance on ink patterns derived from coloring some of the major pleats of a section of shirred casing, which becomes a visible continuous unbroken helical line when the casing section is deshirred is not a conclusive test of conformity with the provisions of claim 1 of the suit patent. Such ink patterns are nowhere referred to in the suit patent claims or specification as indications that the Arnold process is being utilized. (Arnold, Tr. 253; TCX 1). Moreover, even assuming such evidence as ink patterns of helical lines could be conclusive, a comparison of ink patterns on shirred casings produced by Teepak and Viscofan indicates

that although there are somewhat more pronounced discontinuities in the ink pattern produced by a deshirred Viscofan casing, that pattern is substantially helical, and bears much closer resemblance to the pattern of a casing shirred by the Teepak Arnold process than by the Blizzard/Matecki process. This substantial similarity between Teepak Arnold and Viscofan suggests that the same basic process is being used. (Arnold, Tr. 222, 228; Story, TCX 34, p. 6-7; VPX 43; TCPX 57, 59).

The differences between Viscofan and Teepak Arnold processed casings, respectively, on the one hand, and Blizzard/Matecki processed casings on the other hand, are also reflected in the pitch of the helix^{8/} formed in the various casings of these processes. The pitch of a helix formed by the Blizzard/Matecki processes is greater than the pitch of a helix formed by the Teepak Arnold and Viscofan processes, respectively. Thus, in one experiment, it was found that the pitch of the helix in Matecki's TCPX 55 is about 1-5/8 inches, while the helix pitch in Teepak's TCPX 56 is about 7/8 inch. The samples of deshirred casing produced by the Viscofan process also displayed reasonably visible diagonal parallel lines at a helix pitch of about one inch, close to the pitch of the helix in the Teepak casing sample. (Arnold, TCX 33, pp. 9-10; TCPX 55-58; VPX 43).

The foregoing examination of the shirred casings produced by the relevant shirring processes tends to reinforce complainant's demonstrated contention that the Viscofan process, like Teepak's and unlike Blizzard's, achieves the objects of the suit patent by displaying a substantially continuous helical line in its relatively compact shirred pleat pattern.

^{8/} The pitch of the helix refers to the distance between the diagonal parallel painted or inked lines marking the substantially continuous major pleats discernible in the casing section under study.

Finally, as previously discussed, the prosecution history of the suit patent is consistent with and certainly raises no legal estoppel to my interpretation of claim 1 which, supported by a preponderance of the evidence of record, leads me to conclude that all the provisions of claim 1 read on Viscofan's shirring processes. Accordingly, I find that Viscofan's cited processes for the manufacture of skinless sausage casings literally infringe claim 1, and hence claims 2, 3 and 5 of complainant Teepak's '484 patent. This conclusion is properly protective of and consistent with the inventive elements of the suit patent process claims which, as specified in the patent, are intended to cover the operation of any devices meeting the claims' criteria.

Doctrine of Equivalents

Although Teepak relies principally on its contention that Viscofan's processes literally infringe the pertinent claims of the suit patent, it is complainant's position that any process equivalent to the processes covered by the suit patent is infringing. Infringement occurs, according to complainant, if such process achieves the same objects of the Arnold invention through essentially the same substantially continuous helical application of shirring forces to the sausage casing to be shirred. (Complainant Teepak's Closing Arguments, Tr. 2196-97). The doctrine of equivalents allows a patent owner to hold as an infringement a product or process that does not correspond to the literal terms of the claims of the patent but performs substantially the same function in substantially the same way to obtain the same result. 4 Chisum, Patents, § 18.04 (1982); Graver Tank & Mfg. Co. v. Linde Air Products Co., 338 U.S. 605; Duplan Corp. v. Deering Milliken, Inc., 188 U.S.P.Q. 373 (D.S.C. 1973).

Viewed as an aid to the construction and interpretation of claims, the doctrine of equivalents is fully consistent with the general principle that the claim measures the scope of the patent monopoly, and is to be reasonably construed in light of the patent specification and prosecution history in the PTO. 4 Chisum, supra.

Since the suit patent, by its own terms, represents a limited, but new and useful improvement in a method for shirring sausage casings, it is probably entitled to a relatively narrow range of equivalents under the doctrine of equivalents. Julien v. Gomez & Andre Tractor Repairs, Inc., 196 U.S.P.Q. 224 (M.D. La. 1977) aff'd 607 F.2d 1004 (5th Cir. 1979). Based on the evidence of record and the comparative analysis of the Viscofan and Teepak shirring processes, including their respective means or methodology, functions, objects and results, if the question were presented of whether or not the latter process was infringed by the former processes under the doctrine of equivalents, I would find in the affirmative. The Viscofan and Teepak processes perform substantially the same function in substantially the same way to obtain substantially the same results. As previously discussed, the structural and positional differences in the shirring lugs' configuration and in the helical pleat pattern of the casings shirred by the respective processes do not significantly change the nature, scope or effect of the shirring forces being applied. Nor do these differences substantially vary the quality of the shirred casing product sought and intended by the suit patent.

Finally, Viscofan suggests that the doctrine of equivalents is inoperable here because the "equivalent element" was not known to be interchangeable

by persons skilled in the art at the time of the invention. In the Supreme Court case of Graver Tank, supra, (involving a device/composition patent), cited by Viscofan in support of this proposition, it should be noted that the Court did emphasize the knowledge of interchangeability by those skilled in the art as an "important factor." However, it is not clear whether this was intended to mean an "essential" factor. 4 Chisum, Patents, § 18.04[3]. Indeed, there is a split in the authorities on this question, since a number of lower court decisions have adopted a contrary view, i.e., that the alleged equivalent need not exist or be known as an equivalent at the time of invention or patenting. Chisum, supra, citing, inter alia, Edison Electric Light Co. v. Boston Incandescent Lamp Co., 62 F. 397 (C.D. Mass. 1894).

In Edison, the Court recognized that "the fundamental question is whether the alleged infringer makes use of the essence of the patented invention; not whether he has adopted a known equivalent or made a patentable improvement on the invention." Id. at 399. Even assuming, as Viscofan asserts, that the rotating head and the stepped right angle wheel lugs utilized in its shirring process were unknown by those skilled in the art at the time of Arnold's invention, the essence of the Arnold process invention is practiced in the Viscofan process. This includes the application of a plurality of shirring forces sequentially and continuously at an angle to the direction of longitudinal movement and at spaced points in discrete segments around the periphery of the casing, along a substantially continuous helical line.

It is well established that process claims are not limited by the particular apparatus disclosed or utilized. 4 Deller's Walker on Patents,

§ 251 (2d Ed. 1965). However, Viscofan argues, in effect, that since its shirring process, including the rotating head and stepped right angle wheel lugs, has so changed or improved the Arnold process as to perform the same or similar function in a substantially different way, albeit technically within the literal words of claim 1 (Finding of Fact 83), only the reverse doctrine of equivalents may be invoked to restrict the claim and defeat the patentee's action for infringement. See Westinghouse Co. v. Boyden Power Brake Co., 170 U.S. 537 (1898); Graver Tank & Mfg. Co. v. Linde Air Product Co., 339 U.S. at 609.

Although "more than a literal response to the terms of the claims must be shown to make out a case of infringement," Leesona Corp. v. United States, 192 U.S.P.Q. 672 (Ct. Cl. 1976), I would find that Viscofan's shirring processes use the Arnold process invention as taught in the suit patent and that there is substantial identity in terms of means, operation, and result between the Viscofan and Teepak Arnold processes. See Lockwood v. Langendorf United Bakeries, Inc., 139 U.S.P.Q. 220 (9th Cir. 1963). Even in the Westinghouse case (involving a device claim) cited by Viscofan, the court conditioned the applicability of the reverse doctrine of equivalents upon the alleged infringing device having "so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention." Westinghouse v. Boyden Power Brake Co., 170 U.S. at 569. I would not find, on this record, that Viscofan's process so changed claim 1 of the suit patent that, literally construed, that claim no longer represents Arnold's invention.

Misappropriation of Trade Secrets

In Inv. No. 337-TA-169, Union Carbide alleges that Viscofan has engaged in unfair methods of competition and unfair acts by virtue of misappropriation of Union Carbide trade secrets relating to the manufacture of skinless sausage casings. It is Union Carbide's contention that the principals of Viscofan engaged in a massive conspiracy between 1975 and 1979 to steal valuable proprietary information in the form of equipment, drawings, and technical information from Union Carbide's French subsidiary, Viscora. Acquisition of this information, claimed to be proprietary to Union Carbide and maintained in confidence, is alleged to have enabled Viscofan to enter the business and commence commercial production of skinless casings. (Union Carbide PB, p. 1).

In countering Union Carbide's contentions, Viscofan claims that its skinless casing operations were developed independently, utilizing both publicly available information and the experience of one of Viscofan's founding companies, Papelera Guipuzcoana de Zicunaga (Papelera). It is further Viscofan's position that Union Carbide's alleged trade secrets do not possess such proprietary value as to qualify for protection as trade secrets, and/or that the secrecy of this information has been lost by various means. (Viscofan PB, pp. 15-29). In addition, Viscofan alleges that the supposed trade secrets allegedly stolen from Viscora in France are not utilized by Union Carbide in the United States, thus preventing a finding of a domestic industry.

To the extent that the Commission investigative attorney has taken a position on the trade secret issues, the staff agrees with Viscofan that certain of Union Carbide's alleged trade secrets either do not have any value as trade secrets, consist of information available from other public sources, or have lost their secrecy by virtue of plant tours or disclosure in expired agreements. On the issue of actual misappropriation, the staff is of the opinion that the drawings and parts allegedly stolen from Viscora did not contain any of the trade secrets asserted in this investigation. (Commission Investigative Attorney PB, pp. 7-24).

There is no question that misappropriation of trade secrets, if established, is an unfair method of competition or unfair act which falls within the purview of Section 337. See In re Von Clemm, 108 U.S.P.Q. 371 (C.C.P.A. 1955); Certain Apparatus for the Continuous Production of Copper Rod, Inv. No. 337-TA-52, 206 U.S.P.Q. 138 (ITC 1979) (Copper Rod). The Commission has set forth four criteria which must be proven to establish misappropriation of a trade secret:

- (1) the existence of a trade secret which is not in the public domain;
- (2) that the complainant is the owner of the trade secret or possesses a proprietary interest therein;
- (3) that the complainant disclosed the trade secret to respondent while in a confidential relationship or that the respondent wrongfully took the trade secret by unfair means; and
- (4) that the respondent has used or disclosed the trade secret causing injury to the complainant.

Copper Rod, 206 U.S.P.Q. at 156.

The Restatement of the Law of Torts at Section 757, Comment b provides useful guidance in defining what is meant by a trade secret and in assessing whether the requisite level of secrecy exists. The Restatement defines a trade secret as

any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers. It differs from other secret information in a business . . . in that it is not simply information as to single or ephemeral events in the conduct of the business A trade secret is a process or device for continuous use in the operation of the business

The policy underlying trade secret protection is not to encourage development of secret processes or devices, but rather to protect against breach of faith and reprehensible means of learning another's secret. Thus, there is no requirement that a trade secret meet a standard of novelty and invention as required for patentability. Nevertheless, there must exist a substantial element of secrecy, so that "except by the use of improper means, there would be difficulty in acquiring the information."

Relevant factors for determining the existence of a trade secret include:

- (1) the extent to which the information is known outside of [complainant's] business;
- (2) the extent to which it is known by employees and others involved in [complainant's] business;
- (3) the extent of measures taken by [complainant] to guard the secrecy of the information;
- (4) the value of the information to [complainant] and to his competitors;
- (5) the amount of effort or money expended by [complainant] in developing the information;
- (6) the ease or difficulty with which the information could be properly acquired or duplicated by others.

Restatement of Law of Torts, § 757, Comment b (1939). See also Milgrim, Trade Secrets, § 2.01 (1980).

The point of departure for analysis of misappropriation of a trade secret is actual secrecy. McGraw-Edison Co. v. Central Transformer Corp., 135 U.S.P.Q. 53, 55 (8th Cir. 1962). Thus, matters of general knowledge in the industry, or those that can be readily discerned are not eligible for trade secret protection. Motorola, Inc. v. Fairchild Camera & Instrument Corp., 177 U.S.P.Q. 614, 620-21 (D. Ariz. 1973) and cases cited therein. 614, 620-21 (D. Ariz. 1973) and cases cited therein. Matters disclosed in patents also will destroy any claims of trade secret. Henry Hope X-Ray Products, Inc. v. Marron Carrel, Inc., 216 U.S.P.Q. 762, 765 (9th Cir. 1982). However, a specific embodiment of general concepts or a combination of elements, some or all of which may be known in the industry, may be protectible as a trade secret. Cybertex Computer Products, Inc. v. Whitfield, 203 U.S.P.Q. 1020, 1024 (Col. 1977).

Information that may be eligible for protection as a trade secret may lose that protection if adequate steps are not taken to maintain secrecy. Although there must be a substantial element of secrecy, it is not necessary for secrecy to be absolute. K-2 Ski Co. v. Head Ski Co., Inc., 183 U.S.P.Q. 724, 725-26 (9th Cir. 1974); Wheelabrator Corp. v. Fogle, 167 U.S.P.Q. 72 (W.D. La. 1970); U.S.M. Corp. v. Marson Fastener Corp., 204 U.S.P.Q. 233 (Mass. 1979). The burden on complainant is to establish that reasonable precautions were taken to preserve secrecy to ensure that it would be difficult for others to discover the secret without the use of improper means. Henry Hope X-Ray Products, Inc. v. Marron Carrell, Inc., 216 U.S.P.Q., at 764.

Once it is established that a trade secret exists and that its secrecy has been adequately protected, it must be determined how respondent gained access to the information. It is legitimate to discover a secret process by reverse engineering on the finished product, or a secret process may fairly be used if it is gained by independent research. However, "one may not avoid these labors by taking the process from the discoverer without his permission at a time when he is taking reasonable precautions to maintain its secrecy." E.I. DuPont de Nemours & Co. v. Christopher, 166 U.S.P.Q. 421, 424 (5th Cir. 1970). When respondent asserts that his use of the secret process is the product of independent development, respondent bears a heavy burden of persuasion to show that independent development. Cybertek Computer Products, Inc. v. Whitfield, 203 U.S.P.Q. at 1024-25.

Furthermore, it is not enough to assert that a secret process could have been developed independently, without access to the confidential source of information. Sperry Rand Corp. v. Rothlein, 143 U.S.P.Q. 173, 182 (D. Conn. 1964). It is also not an adequate defense to assert that complainant did not take adequate security measures if the security lapse was not the cause of the misappropriation. Syntex Ophthalmics, Inc. v. Novickly, 214 U.S.P.Q. 272, 277 (N.D. Ill. 1982). The claims of trade secret misappropriation by Union Carbide and the defenses presented by Viscofan must be scrutinized in light of the foregoing considerations.

Although Union Carbide alleges that its overall, integrated sausage casing manufacturing operations comprise a trade secret which has been misappropriated by Viscofan, seven specific trade secrets have been designated as representative examples for purposes of this investigation.

These seven trade secrets fall broadly into either Union Carbide's extrusion operations or its shirring operations.

Before considering each of the trade secrets asserted by Union Carbide in light of the foregoing criteria, it is useful to summarize the history of Viscofan's operations and the events which occurred in France and Spain which form the basis of Union Carbide's allegations of theft.

Background of Viscofan's Operations

Viscofan was formally organized in 1975 for the purpose of manufacturing cellulose sausage casings. There were two companies principally involved in the formation of Viscofan, Papelera and Pingon. Papelera was a company which had existed at least since the 1940's, and was involved in the manufacture of cellophane film. In the 1940's, Papelera had experimented with cellulose casings, but did not attempt to manufacture them commercially. (Findings of Fact 20-25).

In the 1970's, Papelera again became interested in manufacturing cellulose sausage casings, and set up a pilot plant to develop the necessary manufacturing processes. Papelera and Pingon Internacional (Pingon), a company involved in collagen casings, then collaborated to set up Viscofan. Sometime around 1976-1978, a pilot plant was set up at Viscofan's facility at Casada, which apparently continued the development work commenced at Papelera. (Findings of Fact 21-25). By 1979, Viscofan had succeeded in producing a casing of commercial quality, and commenced manufacture and sale of cellulose casings. (Findings of Fact 27, 28). The source of technology utilized by Viscofan in the development of its manufacturing processes is the central issue presented by this investigation.

Events in France and Spain

A central area of dispute connected with the issue of trade secrets concerns the evidence offered by Union Carbide in support of its claim of theft. The history of these events begins in about 1975, the year in which Viscofan was formally organized, and the year in which two of Viscofan's principals, Leopoldo Michelena and Jesus Barber, traveled to France to discuss with Bernard They, Viscora's chairman, the possibility of obtaining a license for Union Carbide's cellulose casing technology. (Findings of Fact 20, 266, 267). Since Viscora was a licensee of this technology at the time, Mr. They was not in a position himself to license Viscofan, so he referred Messrs. Michelena and Barber to Union Carbide in New York. (Finding of Fact 268).

In early 1979, Mr. They again heard from Mr. Barber, who requested a meeting with Mr. They, at which he recounted the details of efforts to obtain Viscora's casing technology over the preceding three and a half years. (Finding of Fact 290). In Mr. Barber's account, the central cast of characters included himself, Mr. Michelena and Bartolome Font. (Findings of Fact 23, 25, 269, 290). Barber indicated that after their unsuccessful visit with Mr. They in 1975, Barber and Michelena went immediately to Beauvais, where they ultimately made contact with Bartolome Font. Since Font's employer had gone bankrupt, he was no longer working at Viscora. Over the time that ensued, Barber claimed that Font in effect coordinated the efforts to remove technical drawings and specifications and pieces of equipment from the Beauvais plant. Font had a photocopy machine installed in his apartment in Paris, which was allegedly used to copy drawings, which were then returned to the Viscora plant. The drawings and parts were apparently sent to Viscofan for its use. The individuals alleged to be involved in this operation at Viscora,

including Font, Jean DuBois, Maurice DuBois, Jacques Clichet and Jean Busqueres, were allegedly paid for their efforts by Viscofan. (Findings of Fact 269, 272-283, 287-288).

Barber then offered his assistance to Thery in any action that might be pursued,

Apparently Barber's sudden willingness to assist Viscora, a few short years after he was engaged in its pillage, was motivated by a falling out between he and Michelena. (Findings of Fact 289, 291-294).

(Finding of Fact 294).

In the criminal proceedings that followed, the French police conducted an extensive investigation, which included

(Findings of Fact 295-299). A trial was held in 1983, and certain individuals were convicted of theft and/or corruption of private company employees. (Findings of Fact 300, 302). This judgment made no findings concerning the secrecy or proprietary value of the items stolen.

A similar action was commenced by Viscora in Spain on the basis of the same facts. The Spanish court had a team of civil engineers study and report on their findings concerning the similarities between Viscofan's and Viscora's operations. However, the court determined that it did not have jurisdiction to consider the alleged acts of theft which occurred abroad. (Findings of Fact 303-312).

There is considerable controversy over the use and effect of the French and Spanish proceedings in the present investigation. Substantial parts of the record of each of these proceedings appear in the record of this investigation pursuant to Letters Rogatory issued to the respective French and Spanish authorities. (UCX 1-180). The judgments rendered by the French and Spanish courts are also of record here. (UCX 24, 614, 615). The findings made in both proceedings have been extensively reported by Union Carbide in its proposed findings of fact. (See generally, UCPF 33-183).

Viscofan has voiced strenuous objection to the use of the material from these proceedings in the present investigation. Its primary reasons for objection are three-fold. First,

. (Finding of Fact 294). Second, the evidence obtained from witnesses was generally based on interrogation by police officers in the form of sworn statements. Thus, these witnesses did not appear in court and were not subject to cross examination. Finally, in the French proceeding, neither Michelena nor Font appeared personally, and the judgments rendered against them were by default. (Findings of Fact 301, 302).

With respect to Mr. Barber, it is unnecessary for the purposes of this investigation to resolve, or even to speculate

The manner of interrogating witnesses in the European proceedings also does not call for extensive critique. The French and Spanish officials conducted their proceedings in accordance with their normal, legally mandated, practices and procedures. The results of those proceedings have no collateral estoppel or res judicata effect in this forum, and they are not in this record for purposes of enforcement of any foreign criminal judgments. The noncriminal nature of the present proceeding makes it quite unwarranted to engage in any measurement of the foreign proceedings against United States standards of criminal process.

In short, the judgments made by the French and Spanish courts, and the underlying documents on which they were based, stand in this record exactly as they are, neither ratified nor rejected by this forum. These documents are relevant to, but do not necessarily conclusively decide, the limited issue of the occurrence of theft, and in no way relieve Union Carbide of its burden of establishing every other necessary element incident to trade secret protection.

As will become apparent from the individual consideration of Union Carbide's trade secrets, the evidence submitted from the French and Spanish proceedings is not an indispensable element of the finding of misappropriation, but rather serves as corroboration to the overwhelming inference in certain instances that misappropriation must have occurred. Specific instances of unexplained similarity between Viscora and Viscofan equipment which go far beyond any possibility of coincidence provide ample circumstantial evidence that Viscofan had significant information about Viscora's operations

beyond that which was available through legitimate means. Viscofan's attempts to disavow or explain away these remarkable similarities with often vague or improbable testimony create an even stronger inference of misappropriation.

Accordingly, the evidence on this record developed independently of the French and Spanish proceedings is enough to establish an irresistible probability that Viscofan had access to and benefited from significant amounts of confidential and proprietary Union Carbide technology, and that this access was gained by reprehensible means. The effect of the French and Spanish proceedings is merely to corroborate that probability and to provide an explanation for how that access apparently was gained. Rohm and Haas Co. v. Adco Chemical Co., 215 U.S.P.Q. 1081, 1085 (3d Cir. 1982). The focus of inquiry in the present investigation is not on the culpability of the individuals involved, but rather on the benefits derived by Viscofan by those acting on its behalf.

1. Carryover

The first area of Union Carbide's skinless casing technology in which it alleges that Viscofan has misappropriated trade secrets relates to the carryover or tower in the extrusion phase of the manufacturing operation. It is Union Carbide's position that the design of the carryover section,

secret and proprietary information.

(Union Carbide PB, p. 5; UCX 467, pp. 4-6).

Viscofan counters Union Carbide's allegations by asserting, in essence, that Viscofan's extrusion tower configuration was the product of independent development; that Viscofan legitimately obtained pertinent drawings from its consultant, Raymond Baxter; that the particular technology claimed either is known in the industry or has ceased to be secret because it can be observed in plant tours, and that the specific configuration alleged to have been stolen serves no particular purpose, and thus cannot be considered of proprietary value. (Viscofan PB, pp. 33-36). Furthermore, Viscofan claims that the configuration of the carryover at Viscora is different from that employed in the United States, thus, Union Carbide does not utilize the alleged trade secret domestically.

As is the case with many of Union Carbide's asserted trade secrets, resolution of the pertinent issues relating to the carryover requires a careful evaluation of the elements of the technology which comprise the actual trade secret as distinguished from other elements which do not have any intrinsic proprietary value, but rather are asserted to demonstrate misappropriation of the technology.

traced it from another drawing. (Findings of Fact 121, 125). However, a comparison of his drawing with a Viscora drawing reveals such identity down to fine and arbitrary details that one could only have been traced from the other. (Finding of Fact 121). The suggestion that Viscora traced the drawing from Viscofan strains credulity beyond the breaking point. The Viscora drawing can be reliably traced back to an original drawing made in 1963,

. (Findings of Fact 122, 123, 125, 126). In view of the foregoing, the conclusion is compelled that Viscofan had access to Viscora drawings when it designed its extrusion towers.

Third, Viscofan's claim that it obtained this technology from Raymond Baxter finds no support in the record. The drawing allegedly provided to Viscofan by Baxter dates from 1959, and not only does it show a different tower configuration from that adopted by Viscofan, but it also does not indicate , since that technology had not been developed by then. (Finding of Fact 130). More importantly, Mr. Baxter was not engaged by Viscofan until March 1978, shortly before the pilot plant began its first production tests. As concluded by the team of Spanish engineers who studied Viscofan's and Viscora's operations, it is inconceivable, in view of the timing of Mr. Baxter's arrival, that he could have assisted in

the design, construction and set-up of Viscofan's pilot plant. (Finding of Fact 131-134).^{9/}

Fourth, Viscofan's technical expert, Dr. Dudzik, stated his opinion that . (Dudzik, VRX 538, p. 18). This conclusory statement, unsupported as it is by any public disclosure of in the industry, is outweighed by evidence of the effort expended by Union Carbide to develop a solution to the problem of . (Finding of Fact 110).

Fifth, Viscofan's proposition that Union Carbide's are not secret overlooks several pertinent details. Union Carbide's U.S. Letters Patent 2,013,491 ('491 patent) teaches that the mandrel length in the aquarium should be equal to or greater than 72 inches. In addition, this patent relates the length of the mandrel to the speed of operation. (VRX 13). Nevertheless, this disclosure does not suggest , as used by Union Carbide.

^{9/} The report of the Spanish engineers was made in connection with the litigation between Viscora and Viscofan in Spain. Although the findings contained in this report, as well as the Spanish litigation as a whole, are in no way binding on this forum, within certain limitations, this report is relevant and probative. The Spanish engineers assigned to study the operations of Viscora and Viscofan possess a level of engineering skill sufficient to enable them to evaluate the similarities between Viscora's and Viscofan's facilities. At the same time, these engineers were appointed by the court, and thus reflect an important measure of objectivity. Although the report issued by these gentlemen carefully avoided any specific discussion of possible trade secrets, and in fact concluded that certain areas were similar due to public availability, their analysis and conclusions are relevant and insightful to this proceeding. (See generally, Pasca Mora dep., UCPX 125; UCX 172).

In view of the fact that Viscora uses _____, it is difficult to imagine that Viscofan independently arrived at a _____, when the '491 patent discloses a 72 inch mandrel, and Union Carbide makes use of _____. (UCX 350, 356). The closeness in an undisclosed dimension between Viscofan and Viscora extrusion mandrels strongly suggests that Viscofan had access to Viscora's technology.

Viscofan also points out that Union Carbide's U.S. Letters Patent 2,043,455 ('455 patent) discloses _____. (VRX 14). However, this disclosure is made within the context of an extrusion device _____. Thus, the disclosure of the '455 patent, even combined with the teaching of the '491 patent does not suggest the combination of a _____.

The practical application of _____ by Union Carbide and Viscora goes far beyond the general disclosure made in these two patents.

Finally, Viscofan asserts that the claimed secrecy of Union Carbide's trade secrets has been lost by means of the plant tours given by Viscora. As a general proposition, a plant tour will not result in disclosure of trade secrets if the guests are unable to view the process in sufficient detail to discern the claimed trade secret. Copper Rod, 206 U.S.P.Q. at 158.

In connection with Union Carbide's claimed trade secret in its extrusion tower, there can be no doubt that a plant tour could not reveal the details of the tower to the extent shown in Viscofan's drawings, nor does Viscofan appear to claim that it obtained this information from a plant tour. However, in view of the fact that an extrusion tower is approximately , a tour which goes only to the top of the aquarium cannot reveal many details about the construction of the tower. The ability to see on a plant tour certainly does not reveal dimensional details, nor the relationship of to . (See Demont, Tr. 681-83). In addition, although a guest on a tour can see the aquarium, it is doubtful that it would be possible to ascertain the exact length of the aquarium. Certainly the length of the extrusion mandrel would be unknown, since it is inside the aquarium. Thus, a plant tour cannot be said to disclose Union Carbide's claimed trade secrets in this area.

In view of the foregoing analysis, together with the relevant findings of fact, I conclude that the technology relating to Union Carbide's extrusion tower, or carryover consists of valuable, proprietary information owned by Union Carbide and not freely disclosed or otherwise publicly available. The tower technology currently utilized by Viscofan is so close in structural details to that of Viscofan that the conclusion is compelled that Viscofan's technology could only have been derived from proprietary Viscora drawings and technical information. (Findings of Fact 119, 127-129). Within the context of the evidence presented on this record, I find that Viscofan's carryover technology was developed by means of misappropriation of Union Carbide's trade secrets.

2. Extrusion Nozzle and Mandrel Assembly

The second trade secret which Union Carbide alleges has been misappropriated by Viscofan pertains to Union Carbide's extrusion nozzle and mandrel assembly. Although there are certain minor differences between Union Carbide's and Viscofan's nozzles, it is not seriously disputed that the design and construction of both is substantially the same. Viscofan attributes this similarity to the fact that there are several patents owned by Union Carbide and other publications disclosing the design of extrusion nozzles. In addition, Viscofan claims to have received a drawing from Mr. Baxter. It is established that both Union Carbide and Viscora use substantially identical extrusion nozzles and mandrel assemblies. (Findings of Fact 136-141).

The extrusion nozzle and mandrel assembly are a critical part of the extrusion process, in that they begin the process by bringing together the viscose and acid bath to extrude the viscose in tubular form and then to begin the coagulation and regeneration process. A review of the drawings depicting the nozzle indicates that this piece of equipment possesses many intricate details which must be precisely machined. Although Union Carbide alleges that its entire extrusion nozzle technology is a trade secret, there are essentially five details which bear scrutiny. These elements include:

(Findings of Fact 138, 140, 141).

With respect to this claimed trade secret, the element of secrecy is an important factor as it relates to the basic design of the nozzle and mandrel assembly. Unlike the extrusion tower, which is a comparatively recent development, the extrusion nozzle has been present in casing technology virtually since its inception. However, a comparison of pertinent articles and patents dating back to the 1920's and 1930's with later patents in the 1960's reveals that extrusion nozzle technology has developed considerably over the years.

In spite of the developmental details that have occurred in the design of extrusion nozzles, certain basic elements must be considered to be well known in the art. These elements include the base, the cup, the core, the viscose inlet and the acid inlet of the nozzle. (Finding of Fact 145). Although there is certainly more than one way to assemble these elements, as evidenced by the difference between Teepak's and Union Carbide's extrusion nozzles, these elements, in themselves, cannot be considered eligible for protection as trade secrets. (Finding of Fact 143). The first three construction details claimed by Union Carbide as elements of their trade secret, namely

, are details which have been substantially disclosed in the patent literature by Union Carbide. (Findings of Fact 146-149). Although the pertinent patents contain only schematic diagrams of the elements in question and are thus not as complete as a detailed engineering drawing, nevertheless, the structure disclosed is clear. Accordingly, irrespective of how Viscofan may have come by its extrusion nozzle technology, as to these elements at least, Union Carbide has dedicated them to the public through its patent disclosures.

As to the remaining elements claimed by Union Carbide, namely the

., there appears to be no public disclosure of these construction details. The stated function of these elements evidences their proprietary value, thus qualifying them for protection as trade secrets. (Findings of Fact 150, 151). It has been confirmed that both of these elements can also be found in Viscofan's extrusion nozzle and mandrel assembly. (Findings of Fact 140, 141).

Viscofan's assertion that it independently arrived at an extrusion mandrel of remarkable similarity to Union Carbide's is not persuasive. The primary testimony on this subject is from Mr. Valdes, who at the relevant time was acting as a marketing consultant to Viscofan. The notes and sketches placed in this record, apparently kept by Viscofan's key engineer, Mr. Berriatua, are far more revealing. Mr. Berriatua's notes of tests run in early 1976 indicate that he was experiencing numerous problems with the operation of the extrusion nozzle. Several very rough sketches accompany his notes of these tests. (Finding of Fact 144).

In view of these considerable difficulties encountered by Mr. Berriatua in 1976, it is difficult to understand, and unenlightened on this record, how Viscofan suddenly developed relatively detailed, albeit undated, engineering drawings, and had an apparently operable extrusion nozzle by the time of Mr. Baxter's arrival in April 1978. (Finding of Fact 144; see also UCX 350, 351). The notion that Mr. Baxter filled in the gaps in this area is highly questionable in view of the timing of his arrival at Viscofan and the start up of the pilot plant at Casada.

(Finding of Fact 134). Viscofan's reliance on a Portuguese drawing allegedly received from Mr. Baxter leaves unexplained the fact that Viscofan's drawings are closer to Union Carbide's in several essential respects than they are to the Brazilian drawing. (Cf. UCX 350, 368; VRX 99).

Dr. Dudzik asserts that, with all of the patent disclosures in hand, it would be possible for a person with the appropriate expertise to design a commercially viable nozzle within a week. (See RPF 286). This proposition is belied by the fact that Mr. Berriatua had considerable difficulty in designing a commercially operable nozzle. (Finding of Fact 144). The many variations in nozzle design depicted in the progression of patents over a period of thirty to forty years make it unlikely that a workable solution could be achieved without considerable trial and error. (Findings of Fact 145, 147-149). Finally, the degree of detail present in Union Carbide's engineering drawings and the high security classification given to these drawings suggest that this extrusion nozzle is a highly engineered piece of equipment for which the minutest detail is important. (Finding of Fact 142).

In view of the foregoing considerations, it is more likely than not that Viscofan had access to Union Carbide's extrusion nozzle technology in designing its own extrusion nozzle. This conclusion is reinforced by the presence of certain other details which appear in both Viscora's and Viscofan's extrusion nozzles which are nowhere publicly disclosed. (Findings of Fact 150, 151, 153). The substantial identity in construction between Viscofan's and Union Carbide's extrusion nozzles down to minute detail make it virtually inconceivable that Viscofan's could have been derived independently using only publicly available information.

3. Chemical, Quality Control and Manufacturing Standards and Specifications

The third area of Union Carbide's skinless casing technology in which it asserts that Viscofan has misappropriated trade secrets pertains to standards and specifications. These may be most conveniently placed into three categories: chemical standards, quality control standards, and manufacturing specifications. Although each of these categories contain individual elements, which for purposes of analysis are best considered separately, they are intricately interrelated in terms of the properties of the resulting product. (Findings of Fact 154-162).

Chemical Standards

Union Carbide's chemical standards which it claims have been misappropriated by Viscofan pertain to the composition and properties of its viscose and the acid bath used to regenerate the viscose. Viscofan claims that Union Carbide is no longer using the standards alleged to have been stolen, and that Viscofan independently developed its own standards from publicly available information, with the result that its nominal values fall outside of Union Carbide's ranges.

As presented on this record, chemical standards are a complex and critical aspect of the process of manufacturing cellulose casings. There are many variables that will affect the exact composition of the viscose and the acid bath to achieve the desired end product, with the result that the development of standards is a dynamic and evolving process. (Finding of Fact 159). Thus, consideration of this issue on the strength of the evidence of record

is complicated by the constant evolution of the standards and absence or noncomparability of certain variables.

In the composition of viscose for cellulose casings, the cellulose source is either wood pulp or cotton linters. (Finding of Fact 160).

. (Findings of Fact 163, 164).

. (Finding of Fact 165).

. (Findings of Fact 159, 182).

There is a certain amount of information about the composition of viscose and acid bath publicly available. In 1946 and 1947, the Office of Military Government for Germany published two reports on cellophane and sausage casings made by Kalle in Germany. These reports indicated, with some variation, the standards used by Kalle for its viscose composition and acid bath. (Findings of Fact 171, 181). Several of Union Carbide's patents also reflect certain values for these compositions. (See RPF 204, 215; VRX 9, 13, 16, 17). In

1977, Viscofan approached the Buckeye Cellulose Division of Procter and Gamble about the purchase of cotton linters for cellulose casings. Viscofan indicated its current viscose composition to Buckeye, and Buckeye recommended that Viscofan lower its cellulose content to 7.5 percent and maintain the same viscosity. (Finding of Fact 170). There is no indication that Buckeye gave any recommendations about other ingredients in the viscose composition, or made any suggestions with respect to the acid bath. Finally, Viscofan alleges that its consultant, Raymond Baxter, proposed a viscose composition in 1978. (Finding of Fact 172).

Viscofan has provided two types of figures reflecting its viscose and acid bath compositions. One set of figures corresponds to the standards Viscofan has set for these compositions. (Findings of Fact 168, 178). These figures presumably are an indication of the basic standards and range of tolerances that Viscofan expects to achieve in its manufacturing operations. The second set of figures represents quarterly high and low values taken from actual production runs from 1978 to 1983. (Findings of Fact 166, 167, 179, 180). These latter figures do not precisely correspond to Viscofan's actual standards, but with the progression of time they do indicate a gradual reduction in the ranges of tolerance. (Cf. Finding of Fact 166 with 167 and Finding of Fact 179 with 180). To the extent that Viscofan's actual production figures are not an accurate representation of its standards, it is inappropriate to compare them with Union Carbide's standards. Accordingly, for purposes of this analysis, Viscofan's standards will be compared with

Union Carbide's standards, as well as other publicly available information.

A careful comparison of Viscofan's standards with the other standards presented on this record reveals a remarkably close approximation to Union Carbide's and Viscora's standards for both viscose and acid bath. In general terms, the figures disclosed in the Allied report of Kalle's operations and the figures allegedly disclosed by Baxter reflect the high and low ends of the spectrum with respect to the specific ingredients. (Findings of Fact 171, 172, 181). A comparison of these figures with Viscofan's compositions in 1977 suggests that Viscofan was not adhering to any of these standards. (Findings of Fact 170, 177). Although Mr. Baxter's figures may have accurately reflected Union Carbide's composition at one time, Union Carbide's standards changed in 1974. (Finding of Fact 174).

. (Finding of Fact 170).

The importance of Union Carbide's chemical standards for viscose and acid bath lies in the specific values of each ingredient and their relationships to each other. There is no evidence that Union Carbide or Viscora has disclosed its current chemical standards, and these standards are different and often much more specific or within narrower ranges than any information publicly available. Union Carbide's standards

have resulted in a high quality product, and it is acknowledged by Leopoldo Michelena that chemical standards are an extremely important aspect in the ultimate quality of the casing. (Findings of Fact 183, 184). Even in a situation in which certain elements of a trade secret are in the public domain, a trade secret can still exist in a combination of characteristics or components when that combination is not publicly disclosed and affords the complainant a competitive advantage. Copper Rod, 206 U.S.P.O., at 158, and cases cited therein; Cybertek Computer Products, Inc. v. Whitfield, 203 U.S.P.Q. at 1024. I find such to be the situation here.

Viscofan's production figures indicate that it has had difficulty achieving optimum viscose and acid bath compositions. It has been urged by Viscofan that its production figures fall outside of Union Carbide's ranges, thus indicating that Viscofan is not using Union Carbide's standards. This argument is not persuasive, in view of the fact that Viscofan's actual production figures fall outside of its own standards, but its standards are uniformly very close to those used by Union Carbide. Due to the number of variables that affect optimum viscose and acid bath standards, it is quite likely that Union Carbide's standards may not serve Viscofan as well. (Findings of Fact 159, 169). Nevertheless, knowledge of those standards would provide Viscofan with a base from which to work, thereby reducing the amount of trial and error required, and conferring on Viscofan a distinct benefit.

Viscofan's proposition that Union Carbide is no longer using its chemical standards also falls wide of the mark. There can be no doubt that

In addition, for purposes of identifying the domestic industry in this investigation, it appears that the standards were in use at the time Union Carbide filed its complaint with this Commission. (Findings of Fact 158, 160). Bally/Midway Mfg. Co. v. U.S. International Trade Commission, 219 U.S.P.Q. 97, 100 (C.A.F.C 1983).

Finally, the fact that the temperature gauges on Viscora's acid baths are visible during plant tours cannot be said to disclose Union Carbide's acid bath standards, since temperature is but one component of the combination. (RPF 223; VRX 531Q). Copper Rod, 206 U.S.P.Q., at 158.

In view of the array of publicly available standards, none of which Viscofan appears to be using, it is not credible that the close similarity between Viscofan's and Union Carbide's standards is purely coincidental. For the foregoing reasons, I find that Union Carbide's chemical standards for viscose and acid bath constitute valuable proprietary information which has given Union Carbide a competitive advantage, and which has not been publicly disclosed. The close similarity of Viscofan's standards creates a strong inference that Viscofan had access to Viscora's standards through improper means, resulting in a benefit to Viscofan's operations. Rohm & Haas Co. v. Adco Chemical Co., 215 U.S.P.Q. 1081, 1085, (3d Cir. 1982).

Quality Control Standards

Union Carbide's quality control standards are designed to measure the strength and performance characteristics of the finished casing as well as to maintain uniformity of casing size. The standards at issue are the casing bone dry gauge cellulose content, which measures cellulose content for a given area of casing, and a casing stretch/burst curve which measures casing performance under anticipated stuffing and processing conditions. Union Carbide also maintains standards for flat stock manufacturing dimensions. (Findings of Fact 161, 162, 185, 186).

These quality control standards are no doubt important measures of product quality, adherence to which is an essential ingredient in Union Carbide's success with its casings. There is no indication that this information, as a set of standards for Union Carbide's Nojax casing line, is anywhere publicly disclosed. Nevertheless, both casing bone dry gauge and stretch/burst curve measurements can be ascertained from the finished product. In addition, dry flat width and wet flat width measurements can be approximately measured from the finished product. (Finding of Fact 188).

Clearly, there can be no trade secret in information that can be derived from the finished product. E.I. DuPont de Nemours & Co. v. Christopher, 166 U.S.P.Q. 421, 424 (5th Cir. 1970), Henry Hope X-Ray Products, Inc. v. Marron Carrell, Inc., 216 U.S.P.Q. at 765. The record does not reveal any indication that Viscofan either had or used Union Carbide's quality control standards beyond what could be determined from testing the finished product. (Finding of Fact 188). It must be acknowledged that tests performed on finished,

shirred casing may not be as accurate as the tests run on newly manufactured flat stock. (Finding of Fact 187). In addition, the information obtained in this fashion will not yield the composition of the casing, or a complete set of standards for different casing products.

Nevertheless, to the extent that Union Carbide may have a trade secret in its quality control standards beyond the information that can be ascertained from the finished product, it has not met the burden of establishing that Viscofan improperly obtained or made use of this secret.

Manufacturing Specifications

Union Carbide's manufacturing specifications relate to its flat stock manufacturing dimensions for each size of Nojax casing and all established variants within the size. (Finding of Fact 162). The equipment specifications involved include

. (Finding of Fact 162).

Union Carbide and Viscora currently utilize nozzle sizes, which are designated in inches. Although Viscora's nozzle sizes are given the same inch designations, there are some slight variations in the actual metric conversion. (Findings of Fact 189-191). Viscofan's nozzle sizes are essentially the same as Union Carbide's and Viscora's. (Findings of Fact 192, 193).

. (Finding of Fact 195).

. (Finding of Fact 196).

. (Finding of Fact
196).

, they are one of many
interrelated factors that are established and must be maintained within
tolerances to achieve an acceptable final product. (Finding of Fact
194). Thus, Union Carbide's manufacturing standards must be considered
as an integral part of its system of standards and specifications, and
as such are found to be of proprietary value. Furthermore, there is no
indication that this information has become a matter of public knowledge.

Viscofan's assertion that Mr. Baxter knew Union Carbide's nozzle
sizes is insufficient to meet the burden of establishing that he actually
provided them to Viscofan. For the reasons stated elsewhere in this
opinion relating to Mr. Baxter, it appears quite unlikely that Mr.
Baxter actually provided the amount of information attributed to him
during the time of his visit prior to Viscofan's pilot plant start-up.
(Finding of fact 134).

In view of the foregoing, it is not clear on this record how Viscofan's nozzle dimensions have turned out to be so close to Viscora's. Since the manufacturing specifications are interrelated with chemical standards, acquisition of both by Viscofan from Viscora would clearly give Viscofan a substantial commercial benefit. The near identity between Viscora's and Viscofan's standards and specifications discussed herein cannot be explained as occurring by coincidence and have not been adequately established as being due to legitimate sources of information. The irresistible weight of probability, in the circumstances of this case, leads to the conclusion that Viscofan gained access to Union Carbide's specifications by unfair means. Rohm & Haas Co. v. Adco Chemical Co., 215 U.S.P.Q., at 1085.

Shirring Related Trade Secrets

4. Overall Shirring Machine configuration

The fourth trade secret which Union Carbide alleges has been misappropriated by Viscofan relates to its overall shirring machine configuration. This configuration pertains to the overall process and equipment by which Union Carbide converts flat stock into shirred casing sticks. (Findings of Fact 187, 198). Several elements are identified by Union Carbide as characterizing its shirring machine configuration, the combination of which is claimed to be a trade secret. Viscofan responds to the charge of misappropriation with the assertion that Union Carbide's shirring machine configuration has been extensively disclosed in the patent literature, and further, that Viscofan's machine was independently developed with the assistance of Mr. Font, who had worked at Viscora.

Union Carbide has identified ten items which characterize its overall shirring machine configuration. (UCX 468, p. 1). Three of these items are also classified as trade secrets in their own right, and will be considered individually, infra. It has been established that Viscora initially obtained its shirring machines from Union Carbide, and has maintained them in substantially the same fashion as those in use in the United States. (Finding of Fact 206). Viscofan does not seriously dispute that its overall shirring machine configuration is substantially the same as Viscora's and Union Carbide's. (Findings of Fact 199-201). Thus, the threshold inquiry is whether or to what extent this configuration qualifies as a trade secret.

There are a large number of Union Carbide patents disclosing many aspects of its shirring technology, including an entire shirring machine configuration. (Finding of Fact 214). These patents disclose many elements only conceptually, such that a person skilled in the art of assembling a machine only with the aid of these disclosures would undoubtedly utilize many different construction details from those actually in use by Union Carbide. Nevertheless, to the extent that these patents schematically disclose such elements as:

, Union Carbide may not claim these concepts as secrets. (Finding of Fact 214).

The exact combination of elements and the actual manner in which Union Carbide carries out its shirring operations cannot be said to be ascertainable from the many patent disclosures. Therefore, insofar as this combination gives Union Carbide a competitive advantage, it is a configuration capable of protection as a trade secret. Syntex Ophthalmics, Inc. v. Novickly, 214 U.S.P.Q. at 277.

The next focus of inquiry must be on whether Union Carbide took reasonable steps to guard the secrecy of this claimed trade secret. This asserted trade secret differs in nature from others presented in this investigation in that it comprises a combination of known elements, and does not pertain to precise dimensions and machine designs. As a result, it falls outside of consideration of the manner in which Union Carbide protects its engineering drawings and standards and specifications.

It is Viscofan's assertion that it received assistance from Mr. Font in the design of its shirring machine. Mr. Font was an assembler and maintenance machanic working for a company which services Viscora machines. (Findings of Fact 269, 270). In the deposition conducted in connection with this investigation, Mr. Font indicated that his work at Viscora did not involve the use of technical drawings and that he had not ever seen any Viscora drawings. (Finding of Fact 271). In addition, Mr. Font testified that he had not made any suggestions to Viscofan's engineers in the design of its shirring equipment because he would not be able to. (UCPX 117, p. 53).

Although Mr. Font's experience at Viscora was not such as to allow him to provide technical expertise to Viscofan, this fact does not dispose of the present issue. Mr. Font's work at Viscora would have enabled him to become familiar with the assembly and set up of the shirring machine, thereby making him aware of that combination of elements now claimed to be a trade secret. There is no evidence on this record that Mr. Font was made aware of any secrecy or confidentiality with respect to the configuration of Viscora's shirring machines, nor is there any proof that Mr. Font was placed under any obligation not to disclose confidential information. Since Mr. Font was not an employee of Viscora, and in any event was a nonmanagerial level worker, he was not obliged to adhere to a secrecy agreement. (Finding of Fact 320).

From the foregoing, it appears that, with respect to this particular trade secret, Viscora did not take any steps to preserve its secrecy. In any event, a worker cannot be required to erase his memory or forfeit the knowledge and skills gained in his employment when he commences work with a competitor. See Motorola, Inc. v. Fairchild Camera & Instrument Corp., 177 U.S.P.Q. 614, 621-22 (D. Ariz. 1973).

The nature of this alleged trade secret is such that the combination of elements claimed would be well within the ambit of Mr. Font's responsibilities. In the absence of any formal obligations or even awareness of the need to maintain secrecy, it cannot be said that Mr. Font's communication of his knowledge and experience to Viscofan in this area was in any way reprehensible. Accordingly, Union Carbide has not met its burden of establishing the existence and misappropriation of its claimed trade secret in the overall configuration of its shirring machine.

5. Shirring Head Assembly and Lubrication System

The fifth area of Union Carbide's sausage casing technology in which misappropriation is alleged pertains to Union Carbide's shirring head assembly and lubrication system. The specific characteristics that Union Carbide has identified to establish the similarity between Union Carbide's and Viscofan's shirring heads include:

. (Findings of Fact 218, 222, 223, 226, 230). It is acknowledged by Union Carbide that items 2, 3, and 5 above are not asserted for their intrinsic proprietary value, but rather as arbitrary features which serve principally as "fingerprints" of the alleged misappropriation. (Union Carbide PRB, p. 24).

In response to the charge of misappropriation, Viscofan asserts that Union Carbide's

specific elements found in both Union Carbide's and Viscofan's shirring heads but not disclosed in the , Viscofan asserts that it derived these elements on its own.

Union Carbide's
basic shirring head assembly as of 1958. (Finding of Fact 216). The
was added by Union Carbide
, and thus is not disclosed in it. This addition

was a relatively simple innovation, but it solved a problem of

. (Findings

of Fact 217-219). Viscofan's shirring heads have an

substantially identical to Union Carbide's. (Finding of Fact 220).

. (Findings of Fact 221, 222).

Similarly, the nominal head setting utilized by Viscofan, although not exactly the same as Union Carbide's, is closer to Union Carbide's

. (Findings of Fact 223-225).

Finally, the alignment fixture used to set up the shirring rolls currently employed by Union Carbide is different

. (Findings of Fact 226-228). Viscofan's alignment fixture appears to be somewhat different than both Union Carbide's

. (Finding of Fact 229).

Of the foregoing elements, only

appear to be features of a proprietary nature that provide Union Carbide with a competitive advantage. None of these features are publicly disclosed, and Union Carbide

and Viscora have taken adequate precautions to maintain the secrecy of their confidential drawings which detail these elements. (Findings of Fact 124, 313-319). Viscofan's assertion that these elements can be viewed in a plant tour is not credible. The notion that an unpracticed eye could discern the details of a complex machine while it is in operation, particularly when the guards on the machines would obscure these details when they were in place, finds no support on this record. (Findings of Fact 359-362). See Copper Rod, 206 U.S.P.Q. at 158. In addition, there is no claim that Viscofan actually obtained this information by means of a plant tour. See Syntax Ophthalmics v. Novickly, 214 U.S.P.Q. 272.

In support of the proposition of independent development, Viscofan suggests that these elements are a matter of choice or logic, and that it may utilize alternative means to accomplish the same thing in the future. (RPF 315-317, 320). The fact that these details are not published, taken together with Viscofan's admission that simple alternatives are available, makes doubly mysterious the remarkable similarity between Viscofan's and Union Carbide's assemblies in both significant and insignificant details and gives the lie to the assertion of independent development. The acuity of hindsight makes it easy to label a development logical or simple after it has proven successful. See Sperry Rand Corp. v. Rothlein, 143 U.S.P.Q. 173.

With respect to this trade secret, the evidence of detailed copying by Viscofan is persuasive. The protected secret status of these elements, proprietary to Union Carbide, and the absence of any established legitimate

means of access by Viscofan, compel the conclusion that this information was misappropriated by unfair means. Irrespective of the supposed simplicity or unimportance of these elements, their proven success in the hands of Union Carbide eliminated risk and the need for experimentation by Viscofan.

However, there is insufficient proof on this record that Viscofan is utilizing Union Carbide's . (Finding of Fact 229). In addition, the apparent commercial availability of the gear at issue, together with the relative unimportance of the number of teeth prevents the drawing of any adverse inferences of misappropriation from the similarity between Union Carbide's and Viscofan's gears. (Findings of Fact 230, 231).

6. External Configuration and Construction of Shirring Mandrel

As its sixth trade secret alleged to have been misappropriated by Viscofan, Union Carbide claims the external configuration and construction of its shirring mandrel. The mandrel at issue is a mandrel which is associated with the shirring head in such fashion as to serve as a form for the casing and to maintain the casing's central bore as it is shirred. (Findings of Fact 200-205, 212, 213, 232). The many functions performed by the shirring mandrel which are essential to the shirring process make it evident that virtually none of the details of construction are superfluous. (Id.).

Viscofan's explanation of the high degree of similarity between its shirring mandrel and Union Carbide's is that Union Carbide has disclosed its mandrel configuration in the patent literature, and that Mr. Font provided assistance in the design of Viscofan's mandrel. In addition, Viscofan points to the differences of its mandrel from Union Carbide's as proof of independent development.

in U.S. Letters Patent 2,983,949 to Matecki ('949 patent). This patent discloses a two-pass floating mandrel which is held in position by two releasable clamps with the passageways through the interior of the mandrel to the nozzle being connected at the No. 1 clamp. These internal passages supply air and oil to the nozzle to inflate and lubricate the interior of the casing immediately before being received by the shirring wheels. (Finding of Fact 244). The '949 patent further discloses that the diameter of the shirring mandrel is slightly reduced following the shirring zone to facilitate movement of the shirring stick along the mandrel. (Finding of Fact 244). Thus, the foregoing concepts must be found to have been dedicated to the public.

Union Carbide points to many structural and dimensional similarities between the mandrel used at Viscora and Viscofan's mandrel

(Findings of Fact 233-239).

(Finding of Fact 240).

Union Carbide also points to the identity of a multitude of construction details of its and Viscofan's mandrels, from

(Findings of Fact 239, 242). In addition, the overall length of the respective mandrels,

which is an arbitrary and undisclosed figure, is also essentially identical. (Findings of Fact 245-247). These details go well beyond the patent disclosure and there is no substantial proof that they were otherwise publicly available. The many important functions performed by the shirring mandrel make it apparent that the combination of structural details developed by Union Carbide are closely interrelated and perform in concert to achieve a high quality finished product, thus giving Union Carbide a distinct competitive advantage.

Viscofan's assertion that any trade secret that Union Carbide might have has been lost because the mandrel is visible on plant tours is without merit. Under any circumstances, masks the

. Furthermore, when the mandrel is in place during operation, the is obscured by the shirring head. It is entirely inconceivable that even a highly trained eye could discern the details which comprise this trade secret in the course of a plant tour. Copper Rod, 206 U.S.P.Q. at 158.

In view of the remarkable exactness of detail between Viscora's and Viscofan's mandrels, including many arbitrary details, Viscofan bears a heavy burden of persuasion that its mandrel design was the result of independent development. The assertion that the necessary information came from Mr. Font does not meet that burden.

The evidence makes clear that Mr. Font's responsibilities at Viscora extended to assembling and maintaining shirring machines. He did not utilize Viscora drawings, and did not design parts, but rather assembled finished parts. (Findings of Fact 270, 271; UCPX 117, pp. 57-58). He did

not have an engineering background, and did not consider himself capable of participating in the design of a shirring machine. (UCPX 117, pp. 23, 26, 53). Although Mr. Font thought he might have provided Viscofan with some measurements from Viscora's equipment, he was unable to remember which ones, nor could he remember measurements accurately. (Id. at 53-54). In view of the apparently scant information that Mr. Font was able to provide, and the strong evidence that Viscofan had access to much more accurate and detailed information about Viscora's mandrel, it is not credible that Viscofan independently designed its mandrel with only the aid of Mr. Font's memory.

There being no other apparent and legitimate source for Viscofan's acquisition of Viscora's shirring mandrel technology, the conclusion is inescapable that this information was obtained through misappropriation by unfair means. There is little question that access to Union Carbide's highly engineered mandrel reduced the amount of trial and error that Viscofan would have had to engage in to develop its own mandrel of equal performance.

For the foregoing reasons, I find that the external construction and configuration of Union Carbide's shirring mandrel comprises valuable proprietary information which Union Carbide took reasonable steps to maintain in confidence, and that this trade secret was misappropriated by Viscofan and has been used to its benefit.

7. Shirring Mandrel Internal Spray System

The final trade secret alleged by Union Carbide to have been misappropriated by Viscofan is the internal spray system of Union Carbide's mandrel. Union Carbide developed the

. (Findings of Fact 248-251).

It is established on the record that the patent literature discloses a two-pass mandrel, . . . (Finding of Fact 250). Viscofan argues that

.. Thus, Viscofan's mandrel, which is functionally the same as Union Carbide's, is alleged to be the product of independent development. (Findings of Fact 259-260).

In Union Carbide's and Viscofan's

• (Finding of Fact 253).

. (RPF 378).

. (Findings of Fact 254, 255, 260).

Another important feature

(Findings of Fact 256-258).

(Finding of Fact 256). Viscofan utilizes an essentially identical

. (Findings of Fact 261-263).

Viscofan's claim that a is a simple and
obvious expedient

does not explain why its mandrel is so
nearly identical to Union Carbide's. It is noted in this respect

that Teepak

utilizes a different configuration for accomplishing this process. (Finding of Fact 252). Thus, there is clearly more than one way to carry out this function.

Union Carbide's design of its

is not publicly disclosed, and the technical drawings which reveal its structural details are appropriately maintained in confidence by both Union Carbide and Viscora. (Findings of Fact 124, 313-319).

. (Finding of Fact 256).

The relative simplicity of carrying out the actual modifications does not suggest that the original design of functional requirements was equally simple. It is highly unlikely that another engineer, faced with resolving the problem solved by , but without benefit of Union Carbide's techniques, would arrive at an identical solution.

With respect to the used by Union Carbide to , although it is undoubtedly a critical component in the process, it also appears to be a commercially available, unaltered . (Findings of Fact 255, 260). Accordingly, Viscofan's use of the same type of cannot be regarded as an invasion of Union Carbide's proprietary interest.

Based on the evidence pertaining to this issue, I conclude that the design and function of Union Carbide's internal spray system comprises valuable, undisclosed, proprietary information. The remarkable similarity of Viscofan's to that used by Viscora and Union Carbide belies any claim of independent development, particularly in view of the different approach to the same problem developed by Teepak. In the absence of any convincing showing that Viscofan had legitimate access to Union Carbide's technology in this area, the conclusion is inescapable that Viscofan obtained this information by unauthorized and unfair means.

Accordingly, I find that Union Carbide has a trade secret in the internal spray system, which secret has been misappropriated by Viscofan.

Confidentiality of Union Carbide's Trade Secrets

In response to Union Carbide's claims of misappropriation, Viscofan has stressed the absence of confidentiality agreements between Viscora and its nonmanagerial employees and outside workers, notably Jean DuBois and Bartolome Font. The proper scope of this defense, within the context of this investigation together with the legal authority relied on by Viscofan, must be placed in perspective.

As noted supra, at 244, one of the elements of proof of misappropriation of a trade secret is that the secret information was disclosed to respondent while in a confidential relationship with complainant or that respondent took the trade secret by unfair means. Copper Rod, 206 U.S.P.Q., at 156.

The vast majority of legal authority presented on this issue concerns situations in which information was disclosed by an employer to an employee while that employee was in a confidential relationship with his employer. These cases are characterized by factual situations involving high level employees who either developed the trade secret at issue themselves or had unquestioned access to the secret information in the normal course of their employment. Frequently, these cases also involve secrecy, confidentiality or noncompetition agreements.

The facts of the present investigation are distinguishable from the foregoing scenario in many important respects. It is established that certain employees and workers at Viscora, notably Messrs. Font and DuBois

were subsequently hired by Viscofan and have utilized their experience gained at Viscora in their work at Viscofan. (Findings of Fact 269 270, 278, 284-286). The exact scope of their contribution to Viscofan is far from clear. Nonetheless, it is not seriously disputed that both Font and DuBois were nonmanagerial employees who were not required to sign secrecy agreements with Viscora. (Findings of Fact 271, 284, 320).

These facts do not undermine Union Carbide's claims of secrecy. It is not alleged by Union Carbide that either Font or DuBois breached any obligations of confidentiality they may have owed to Viscora by going to work for Viscofan and utilizing the knowledge and experience gained in the course of their work for Viscora. This they had a perfect right to do. Future Plastics, Inc. v. Ware Shoals Plastics, Inc., 173 U.S.P.Q. 733, 739 (D.S.C. 1972). Rather, what is alleged is that several individuals engaged in a species of industrial espionage to acquire Viscora's technical information. It can hardly be suggested by Viscofan that because certain of Viscora's workers were not under any formal obligation to observe secrecy they had licence to remove documents and parts from Viscora's plant.

The testimony of both DuBois and Font is enlightening in this respect. Both men testified that in their work they had no occasion to use technical drawings, and would not be capable of designing extrusion or shirring equipment. (Findings of Fact 271, 284, 286; UCPX 117, p. 53). Font claimed never to have seen any Viscora drawings; DuBois claimed he did not know where they were kept at Viscora. (Findings of Fact 271, 284). Font suggested that he may have provided a few of Viscora's dimensions to

Viscofan, but he couldn't remember which ones, and didn't think he could remember the dimensions accurately. (UCPX 117, pp. 53-54). DuBois described the types of suggestions for improvements that he had made at Viscofan, none of which related to the trade secrets at issue. (Finding of Fact 286).

The testimony of both DuBois and Font, taken together with their educational background and employment experience, suggests that within the legitimate scope of their employment with Viscora they would not have had access to or knowledge about the claimed trade secrets. In this event, it was not a breach of security for Viscora to fail to obtain secrecy agreements from employees who did not have direct access to trade secrets.

To the extent that Viscofan claims Font and DuBois as the sources of its information, much of the information must have been derived outside the legitimate scope of their employment. This inference is strengthened by the improbable testimony given by both Font when questioned about his purchase of a Canon photocopier, and DuBois when asked to explain the payments received from Viscofan before he commenced employment there. (Findings of Fact 273-277, 279-283).

The notion that employment within Viscora's facilities unburdened by a secrecy agreement would give free reign to remove drawings and equipment to send to a primary competitor is untenable. "[O]ur devotion to free wheeling industrial competition must not force us into accepting the law of the jungle as the standard of morality expected in our commercial relations." E. I. DuPont de Nemours & Co. v. Christopher, 166 U.S.P.Q. at 124. Therefore, I find that Viscora took reasonable precautions to preserve the secrecy of its technology, and could not have foreseen or prevented the espionage that occurred.

Union Carbide/Matarazzo Joint Venture

As a defense to Union Carbide's charge of trade secret misappropriation, Viscofan asserts that Union Carbide lost the secrecy of its alleged trade secrets by virtue of its failure to take action against its Brazilian joint venturer, Matarazzo, and a former employee of the joint venture, Raymond Baxter. (Viscofan PB, pp. 26-27). The Commission investigative attorney agrees with Viscofan on this point. (Commission Investigative Attorney PB, pp. 16-18). An examination of the facts relating to this issue does not compel the conclusion of loss of secrecy urged by Viscofan.

Union Carbide entered into a joint venture with a Brazilian company, Matarazzo, in 1957, and formed a company entitled Visking do Brasil (Visking). Under this agreement, Union Carbide provided certain of its skinless casing technology and know-how to Visking do Brasil. Initially, Visking shirred finished casings manufactured by Union Carbide, but as the market developed, Visking acquired additional technology from Union Carbide, and began to manufacture casings as well. Mr. Raymond Baxter became director of Visking in about 1969. (Findings of Fact 330-334).

The joint venture agreement provided for an exchange of technology for a period of fifteen years. In addition, the agreement contained a clause requiring all parties to maintain all technology, know-how and proprietary information confidential, and to require their officers, directors and key personnel to agree to do the same. (Findings of Fact 331, 332). During the

1960's, Union Carbide's equity in Visking diminished. In about 1976, Matarazzo entered into a joint venture with a German company, Hoechst, called Trifichel. Union Carbide was concerned that Matarazzo had transferred the assets of Visking to Trifichel, and reminded Matarazzo of the continuing obligation to protect the confidentiality of Visking's technology. Mr. Baxter's employment continued with Trifichel. (Findings of Fact 335, 339-343). In 1978, Mr. Baxter, having left Trifichel and settled in Portugal, offered his services as a consultant in skinless casings technology to Viscofan. Viscofan entered into a one-year contract with Mr. Baxter beginning in March 1978, during which time Mr. Baxter visited Viscofan at least in April-May 1978 to assist with the start up of the Caseda plant. (Findings of Fact 346-348).

Union Carbide does not allege in this investigation that Mr. Baxter misappropriated trade secrets from Visking, although it was believed that he had done so. (Finding of Fact 344). Moreover, Union Carbide does not suggest that Viscofan acquired any of the trade secrets at issue from Mr. Baxter. In view of the fact that certain technology was never transferred to Visking, it appears that some of the trade secrets at issue could not have been divulged to Viscofan by Mr. Baxter. (Findings of Fact 336-338). The record does not clearly establish the full extent of technical know-how received from Mr. Baxter by Viscofan.

However, the issue proposed by Viscofan is whether Union Carbide lost all claim to secrecy by its failure to pursue Mr. Baxter, irrespective of whether Viscofan actually received any of the technology in question from Mr. Baxter.

On the basis of the present record, it is unnecessary and unwarranted to attempt to resolve the legal status of Union Carbide's relations with Matarazzo and Mr. Baxter. The explicit terms of the joint venture agreement imposed a confidentiality requirement on all parties to the agreement, including officers, directors and key employees. Mr. Baxter's status as director of Visking would have made him subject to this confidentiality provision, and correspondence transmitting certain technology to him indicates that he was made aware of this requirement. (Findings of Fact 332, 334). Certainly Union Carbide felt that the confidentiality provision of the agreement extended beyond the term of the fifteen-year exchange of technology, and notified Matarazzo of this belief. (Findings of Fact 344, 345).

To the extent that the trade secrets at issue in this investigation were either not known by Mr. Baxter or not communicated by him to Viscofan, it is impossible to conclude that Union Carbide forfeited any secrecy by virtue of its relations with Matarazzo. The licensing of technology, in itself, does not destroy the secrecy of trade secrets. Milgrim, supra §§ 2.04 at 2-34, 5.03[7] at 5-80 - 5-81. Contrary to Viscofan's implication that Union Carbide freely transferred technology to Matarazzo without contractually agreed confidentiality, it is clear that Union Carbide not only obtained an agreement from Matarazzo to preserve secrecy, but that it continually reminded Matarazzo that all technology transferred was under the confidentiality requirement. (Findings of Fact 332, 334, 341-345). The terms of the agreement do not support Viscofan's assertion that the confidentiality requirement ended with the term of the exchange of technology.

(Finding of Fact 332). Union Carbide's reasons for not taking action against Mr. Baxter are not fully explained on this record. Nevertheless, the facts in evidence do indicate that Union Carbide contemplated taking action and made its position, both with respect to Trifical and Mr. Baxter, clear to Matarazzo. (Findings of Fact 343, 344).

On the basis of the foregoing, I conclude that Union Carbide did not forfeit the claim to secrecy of the proprietary information transmitted to Visking do Brasil by virtue of its relations with Matarazzo and Mr. Baxter.

Union Carbide/Teepak Licensing Agreement

Viscofan asserts that Union Carbide lost the claim to secrecy of its know how by virtue of the expiration of the Second 1967 Agreement between Teepak and Union Carbide. The record does not clearly indicate exactly what know-how was transferred by Union Carbide to Teepak under this agreement. Nevertheless, it appears that the know-how exchange was not fully consummated and that, in any event, Teepak did not use much of the know-how it received. In addition, Teepak has taken steps to preserve the confidentiality of the technology received. (Findings of Fact 349, 350). Accordingly, I find no support for the proposition that Union Carbide has forfeited any claims to secrecy on account of this agreement.

Level of Technology

In support of its claim of independent development of its technology, Viscofan contends that sausage casing technology is not particularly sophisticated, and that successful operation of a casing manufacturing operation does not require a high level of skill or experience. Irrespective of the

the relative sophistication of this technology, for which this record provides no basis for comparison, it is clear that the manufacture of cellulose sausage casings has evolved into a relatively high level of industrialization.

There is ample support on this record for the proposition that the development and operation of a manufacturing plant on the scale of the operations of the parties to this investigation require extensive planning, development, preparation and organization. (Finding of Fact 264). The efforts expended by Teepak and Union Carbide over the years have resulted in ever increasing speed of operation, constant improvement in product quality, and overall efficiency and reproducibility of manufacturing operations. These results are accomplished by an extensive and intricate system of drawings, standards and specifications, which are considered, by Union Carbide at least, to be a necessary aspect of successful operation. (Finding of Fact 265).

In this light, the incomplete and seemingly disorganized framework of Viscofan's operations tends to bolster the doubts raised about the independent development of their operations. There appears to have been no systematic organization or development of Viscofan's manufacturing operations as described on this record. In spite of the seemingly haphazard manner in which drawings and plans have been made and kept and standards set, Viscofan has established a major manufacturing operation in the course of a few short years.

In contrast to the efforts expended and system developed and maintained by Union Carbide, this relative disorganization is difficult to comprehend. In the absence of a coherent or credible explanation for Viscofan's lack of technical documentation, the inference that its technology was largely acquired from Viscora, rather than developed independently, is strengthened, particularly in light of the specific evidence adduced by Union Carbide of Viscofan's surreptitious access to technical documents and equipment at Viscora. The evidence of misappropriation placed on this record by Union Carbide imposed a heavy burden of persuasion by Viscofan that its technology was acquired fairly. Viscofan's attempts to meet this burden have, instead, strengthened the already strong inference of misappropriation.

Affirmative Defenses

Patent Misuse and Unclean Hands

As affirmative defenses to the relief sought by complainants Teepak and Union Carbide in this investigation, respondent Viscofan alleges that by their anticompetitive conduct and intent the complainants are disqualified under the equitable doctrines of patent misuse and unclean hands, respectively, from obtaining any relief under § 337. Specifically, Viscofan alleges that "Union Carbide and Teepak have engaged in a continuing combination and conspiracy since 1937 to share their patents, technology and know-how in the sausage casing field for the purposes of excluding all competition from the skinless sausage casing business, thereby enabling the two companies to reap monopolistic profits from the sales of such casing." (Viscofan's PB, p. 51.

The doctrine of patent misuse which is an extension of the equitable doctrine of unclean hands to the patent field precludes enforcement of a patent when the patent owner uses the patent in a way violative of the antitrust laws, including the Sherman and Clayton Acts,^{10/} or extends the patent beyond its lawful scope. 4 Chisum, supra, at § 19.04. See, e.g., United States Gypsum Co. v. National Gypsum Co., 352 U.S. 174 (1957). As stated by Chisum:

Both the misuse doctrine and the antitrust laws as applied to patent practices involve a common inquiry:

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- 10/ The Sherman Act provides in pertinent part:
- § 1. Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal.... 15 U.S.C. § 1.
- § 2. Every person who shall monopolize, or attempt to monopolize or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a misdemeanor.... 15 U.S.C. § 2.

Should the practice in question be treated as an appropriate exercise of the patentee's statutory patent rights? If the answer to the inquiry is affirmative, then the practice is not an improper "extension" within the meaning of the patent misuse doctrine and should enjoy an immunity from anti-trust liability even though but for the patent the practice would violate the antitrust laws.

...

Antitrust analysis involves a balancing of patent interests and the impact or likely impact of a practice on competition. The misuse doctrine compounds the difficulty of balancing by substituting for competitive injury the vague concept of "extension."

4 Chisum, supra, § 19.04

The doctrine of unclean hands is based on the more general equitable maxim that suitors must come into court with clean hands, i.e., without themselves being in violation of the law. Like the related equitable doctrine of patent misuse, it requires that there be an "immediate and necessary relation" between the relief sought and the particular conduct giving rise to the unclean hands alleged. Keystone Driller Co. v. General Excavator Co., 290 U.S. 240, 245 (1933). As stated by the court in Keystone: "[C]ourts of equity ... apply the maxim requiring clean hands only where some unconscionable act of one coming for relief has immediate and necessary relation to the equity that he seeks in respect of the matter in litigation." Id. at 245; Glass Laboratories, Inc. v. Crystal, 165 U.S.P.Q. 647, 648, citing Pomeroy, Equity Jurisprudence, Vol. 2, Section 399 (5th ed. 1941).

Viscofan asserts its standing to invoke these equitable doctrines on the grounds that the suit patent is "an integral part of Union Carbide/Teepak's overall unlawful scheme to exclude all competition and perpetrate their monopoly in the skinless sausage business." (Viscofan's Response to Complainants' Post-Hearing Statements, p. 32). To meet the "necessary and immediate relationship" between the alleged unconscionable conduct of complainants and the relief they seek (i.e., enforcement of the suit patent and protection of their trade secrets), Viscofan alleges that the suit patent, owned by Teepak and licensed to Union Carbide, is part of an illegal pooling of cross-licensed patents between Union Carbide and Teepak. It further alleges that the trade secrets that Union Carbide claims were misappropriated by Viscofan are part of the entire illegal combination and conspiracy, including pooled technology and know-how, whose purpose was to further the Union Carbide/Teepak monopoly and to eliminate Viscofan as a competitor.

Although the asserted equitable defenses appear properly raised with respect to enforcement of the suit patent, the same is not so clear with respect to enforcement of the trade secrets. Union Carbide's alleged anticompetitive wrongdoing, claimed to include illegal patent pooling, collusive price-fixing and other predatory acts with Teepak appears unconnected with the alleged theft of Union Carbide's trade secrets in its technology. It is established on this record that the licensing of Union Carbide's trade secrets to Teepak was never fully carried out, and that Teepak largely has not used Union Carbide's know-how. (Findings of Fact 523, 529, 532, 552). Thus, there has been no concerted, collusive behavior between complainants with respect to the trade secrets at issue. Furthermore,

in the particular facts of this case, due regard must be given to the equitable nature of Viscofan's defense. It is well established that a party seeking equitable relief must come into court with clean hands. A balancing of the equities in this case, in which Viscofan is found to have misappropriated trade secrets by unfair and unethical means, does not place ^{11/} Viscofan in a strong position to assert such a defense.

In any event, a more comprehensive analysis seems warranted to fully and fairly determine the merits of Viscofan's serious affirmative defenses, which it has the burden of proving by a preponderance of the evidence of record.

^{11/} One of the distinctions between trade secrets and patents is that a patent holder has a limited term monopoly of his patentable invention, whereas a trade secret owner has protection of uncertain duration which is generally lost upon marketing the product. This distinction militates against precluding enforcement of trade secrets by analogy to the patent misuse doctrine. Milgrim, Trade Secrets, § 6.05 [4].

Patent Pooling/Cross Licensing Agreements

Background

Viscofan alleges that Union Carbide and Teepak began their illegal patent pooling in 1937 when the two companies signed a "License Contract" under which litigation as to a single patent was settled. Union Carbide licensed Teepak under

(Finding of Fact 438). The referenced patent settlement was actually between Teepak and Visking Corporation, the predecessor of Union Carbide's Films-Packaging Division, which had developed and patented the basic cellulose casing technology used to make skinless sausage casing. (Finding of Fact 438). Soon thereafter, there was competition in the cellulose casing market, with the entrance of the Transparent Packaging Company, predecessor of Teepak, which led to patent infringement litigation. In settlement of the infringement suit brought against it, Teepak obtained a nonexclusive royalty-bearing license under Visking's dominant patents. (Finding of Fact 438). Another competitor, Sylvania Industrial Corporation, was also licensed by Visking. (Finding of Fact 439).

. (Finding of Fact 438).

In the mid-1950's, Teepak developed an automated belt shirring technology represented by the Blizzard '714, '715 and '201 patents. (Finding of Fact 440). This new technology was a significant improvement in the shirring process and gave Teepak a substantial competitive advantage

over Visking. (Finding of Fact 441). To remain competitive, Visking developed a shirring process using wheels rather than belts which, as described in the Matecki '949 and '574 patents, effected further improvement in the art. (Findings of Fact 442-433). Since the Matecki patents' process came within the purview of Teepak's Blizzard patent claims, Visking (Union Carbide) was effectively blocked in making further improvements through its own research and development. (Finding of Fact 444). In 1957, Teepak filed a patent infringement action under its Blizzard patents against Visking and Union Carbide (which had just acquired Visking). (Finding of Fact 446).

After long and bitter litigation, Teepak and Union Carbide agreed to settle their litigation on the basis of a 1960 Settlement Agreement. Under the terms of this Agreement, in return for dropping its infringement action, Teepak received a substantial sum of money, a nonexclusive license to

(Finding of Fact 447),

In return, Teepak also licensed to Union Carbide

(Findings of Fact 447-448).

Although the 1960 Settlement Agreement resolved patent litigation between Teepak and Union Carbide in the United States, in 1962 Teepak brought an infringement suit against Viscora, Union Carbide's French affiliate, based on the French counterpart of the Blizzard patents. In

1965, Teepak filed another patent infringement suit, this time against Kalle in Germany, based on the German counterpart of the Blizzard patents. After extensive settlement negotiations, these European litigations were settled by Teepak and Union Carbide in the so-called 1967 Agreements. (Finding of Fact 461). Under the 1967 Agreements, a number of patents relating to shirring for an eight-year period were cross-licensed between the parties royalty-free. (Finding of Fact 470). A number of patents relating to casings of every kind for the same eight year period were also cross-licensed by an optioning process whereby patents from the patent pool could be selected and used by either party, with royalty rates negotiated at a later date. (Findings of Fact 458-467).

Analysis

Viscofan alleges that the foregoing series of cross-licensing agreements, culminating in the 1967 Agreements, constitute a massive, worldwide and illegal patent pooling arrangement for the true purpose of creating a single unified technology in the major areas of skinless sausage casing technology which has substantially excluded all other competition from this business for over 40 years. Complainants contend, to the contrary, that the language, context and history of these agreements, which terminated in 1975^{12/} demonstrate that they were nonexclusive, the result of arm's-length bargaining, and that they settled bona fide patent disputes and resolved important recurring blocking situations. (Teepak's PB, p. 28).

^{12/} Although terminated in 1975 (VRX 510, p. 601; VRX 523), complainants continue to operate under the 1967 Agreements "until the expiration of the last to expire of the patents." (VRX 511, p. 00638).

A preponderance of the evidence of record substantially supports complainants' position.

To prove patent misuse, Viscofan has the burden of proving (1) that the cross-licensing agreements have had an unreasonable and continuing anticompetitive effect, and (2) that the agreements were entered into by Teepak and Union Carbide with wrongful, anticompetitive intent. USM Corp. v. SPS Technologies, Inc., 694 F.2d 505, 513 (7th Cir. 1982); Cutter Laboratories, Inc. v. Lysophile-Cryochem Corp., 179 F.2d 80, 93-94 (9th Cir. 1949). It is also Viscofan's burden to prove a causal connection between the alleged anticompetitive effects and the agreements themselves, as distinguished from Teepak's and Union Carbide's legitimate patent rights which, of course, they were free to exploit. United States v. Westinghouse Electric Corp., 648 F.2d 642, 649 (9th Cir. 1981).

Viscofan argues that the various cross-licensing agreements comprising the patent pool were "overly broad" and went unduly further than was necessary beyond the bona fide ends of resolving pending lawsuits and unblocking blocking patents. Analysis of all the Agreements, especially those in 1967, fails to sustain Viscofan's contentions. The 1967 Agreements resolved at least four major blocking or potentially blocking patent disputes relating to end-closure technology, twist-shirr technology, internal coating of the sausage casings, and the Arnold invention covered by the suit patent. (Findings of Fact 478-504). The royalty-free cross-licensing of these blocking patents pursuant to the 1967 Agreements was on a nonexclusive basis, meaning that the parties were free to license them to

third parties. This occurred in at least two instances with Matarazzo in Brazil and Kalle in Germany.^{13/} (Findings of Fact 434-435).

Another provision of the 1967 Agreements gave each party a right for a limited period of time to negotiate individual royalty-bearing licenses under certain of the other's future patents and patent applications. (Finding of Fact 517). Teepak, which had less than 30% of the United States skinless sausage casing market at the time, sought this provision because of its long-standing concern about Union Carbide's greater research and development capability and the danger of being nosed out of the market by future broad patents. (Finding of Fact 467; Russell, TCX 502, pp. 30-31; Clement, Tr. 1449-50). Even so, this option provision provided only a temporary safety net, since no ceiling was imposed on royalty rates for any patent licenses optioned after October 1, 1970, thus providing increased incentive to the parties, especially Teepak, to push its independent research and development. (Findings of Fact 553-575). Indeed, since the 1967 Agreements, Teepak and Union Carbide have each constantly pursued independent technological research and development, the fruits of which have not been exchanged. (Findings of Fact 521; 553-575). This fact alone tends to rebut Viscofan's contention that the Agreements resulted in a unified technology. Although a number of patent licenses relating to skinless sausage casings were negotiated between Teepak and Union Carbide,

13/

. Wolff sought a license in order to permit it to make use of Union Carbide's technology, including the suit patent and the allegedly stolen trade secrets, to the extent that technology was possessed (illegally) by Viscofan, which Walsrode was seeking to acquire. (Finding of Fact 676).

the latter firm did not utilize or incur royalties under any such license. (Finding of Fact 522). Teepak optioned and utilized only one such patent license, Union Carbide's so-called Easy Peel '349 patent, (VRX 55), a commercial process relating to internal coating. (Finding of Fact 523).

The 1967 Agreements also included a provision for exchange of shirring know-how limited to existing know-how developed prior to December 31, 1967. (Finding of Fact 470). Neither Teepak or Union Carbide ever used commercially the know-how that was received, and no know-how was exchanged after the provision expired in 1970. (Findings of Fact 537-545, 552). Even though each party found, after examination and testing, that the exchanged know-how was inapplicable to its own distinctive shirring system, Viscofan points to the fact that this exchange was never fully implemented as indicating an intent on the part of the parties to tie-up and monopolize patents and know-how for the purpose of denying technological knowledge to third parties, whether or not it was useful to the parties themselves. Such an inference in this instance appears unwarranted. However, whether this aspect of the Agreements, considered in the context of all the other provisions and ramifications of the Agreements, and viewed in the aggregate and in terms of the realities of the marketplace, adds up to an overriding, pervasive and illegal anticompetitive intent is a question that cannot be ignored.

As to the immediate question of the anticompetitive effect of the cross-licensing agreements and patent pool, the evidence of record does not sustain Viscofan's affirmative contentions. The 1967 Agreements, for example, were not overbroad. In fact, it is arguable that they were not

broad enough to prevent subsequent litigation between the parties. (Findings of Fact 458, 576). I also find that in a very real sense the 1967 Agreements, like the 1960 Settlement Agreement, were pro-competitive, since they enabled Teepak, with its smaller market share and more limited resources, to survive and compete successfully in the United States and Europe against Union Carbide and its foreign affiliates. (Finding of Fact 424). In any event, I am no less reluctant than the Ninth Circuit, to substitute a trial court's speculation as to other preferable alternatives to the negotiated settlement of the blocking and other patent dispute situations in this case. See Carpet Seam Tape Leading Corp. v. Best Seam, Inc., 694 F.2d 570, 580 (9th Cir. 1982).

Price-Fixing

Viscofan asserts that, by reason of their illegal patent pool and cross-licensing arrangements, resulting in shared technology and exclusion of competition, Union Carbide and Teepak are able to and do charge identical prices for their casing products, never grant significant closeouts, and collusively raise prices for casings by the same amount each year, conforming exactly to each other's alternate year price increases. (Viscofan's Response to Complainants' Post-Hearing Statements, pp. 44, 45). Thus, argues Viscofan, the patent pool was used as a vehicle by which the complainants have been able to engage in collusive pricing practices which constitute patent misuse.

The record certainly confirms a remarkably similar, and often identical pricing pattern for the sale of sausage casings by Union Carbide and Teepak over a substantial period of time. (Finding of Fact 364).

(Findings of Fact 397-402). However, the record also reflects substantial evidence of price competition. For example, in at least of the past

 years Teepak announced a new price increase which Union Carbide did not follow. (Finding of Fact 364). In each of these instances, when Union Carbide announced its own lower price increase, Teepak reduced its prices to match Union Carbide's

. (Finding of Fact 370-371). It is also true that in most of the past years, complainants did not follow each other in the effective date of the price increase, and used the time differential to offer extended

"pre-buy" or "buy-in" periods during which the casings could be bought at the old price. (Findings of Fact 373-374).

Other evidence of independent price competition includes

. (Finding of Fact 380).

. (Finding of Fact 381). Both complainants engage in nonprice competition in their respective terms of sale, such as

1. (Finding of Fact 383). Other evidence of competition in nonprice areas by both complainants, acting independently of each other, include (1) continual improvements in product quality and minimization of product defects; (2) provisions of extensive technical services to customers; (3) substantial, continuing investment in research and development to achieve cost reductions and creation of new products, as well as better quality; and (4) innovative marketing and sales approaches, including establishment of regional facilities to provide timely delivery desired by customers. (Findings of Fact 409-420).

Perhaps the best evidence of the vigorous nature of this competition is

. (Finding of Fact 424).

is sufficient to indicate that the market is functioning competitively. (Finding of Fact 423).

In support of its collusion argument, Viscofan asserts that consciously parallel price-setting by two or more sellers, even in the absence of an express agreement, can be anticompetitive within the meaning of the Sherman Act, if such is the intent and effect. Viscofan's reference to price signalling in this connection is not well founded, since price increases are generally announced only to customers, rather than publicly, and there is no evidence that Union Carbide and Teepak ever discussed United States prices with each other. (Finding of Fact 368). Indeed, advance notices of price increases in an oligopolistic industry are not unlawful under the antitrust laws. E.I. DuPont de Nemours & Co. v. F.T.C., 729 F.2d 128, 139 (2d Cir. 1984). Economist Nehmer's opinion that price signalling was a likely factor here adds little weight on this issue in view of the contrary opinion of Dr. Berry, a no less qualified economist. (Berry, UCX 817, p. 6; See Findings of Fact 695-697).

Mr. Nehmer's further opinion that complainants' pricing practices are collusive also lacks credibility. Contrary to established law, that consciously parallel activity without agreement is not a violation of the Sherman Act, Mr. Nehmer defines collusion to include consciously parallel actions in the circumstances of this case, where there has been no substantial showing of even tacit agreement to fix prices. Theater Enterprise v. Paramount Film Distributing Corp., 346 U.S. 537, 541 (1954); Turner, The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals to Deal, 75 Harv. L. Rev. 655, 681 (1962). Mr. Nehmer unreasonably ignores the duopolistic nature of the skinless sausage casing industry,

in which the product is highly standardized, and the demand for the product is inelastic. (Finding of Fact 393). In such a market situation, parallel pricing is exactly what one would expect as a result of independent pricing decisions. If either Teepak or Union Carbide tried to gain market shares by cutting prices, the other would immediately match the lower price, with the likely result that neither party would gain market shares, and thus each would be making fewer profits with the same market share. E.I. Dupont de Nemours & Co. v. F.T.C., 729 F.2d at 139. Thus, in the absence of any unlawful agreement or conspiracy, neither Union Carbide nor Teepak would be expected to initiate price reductions. (Berry, UCX 817, pp. 4, 10).

Mr. Nehmer's collusion opinion was partly based on the respective market shares, which he perceived as stable, reflecting a controlled market. He apparently discounted the fact that between 1972 and 1983,

. (Finding of Fact 424).

Mr. Nehmer himself agreed would be a good indication that the market was functioning competitively. (Finding of Fact 423). Dr. Berry regarded the pricing pattern in this industry as "one of competitive interaction, not of collusive stability." (Berry, UCX 817, pp. 9-10). Similarly, Mr. Nehmer's reliance on the alleged absence of efforts by Union Carbide and Teepak to try to expand the total market is misplaced, in view of Union Carbide's efforts to promote and increase hot dog consumption and, thereby, the sales of casings. (Findings of Fact 416-418, 696-697). Dr. Phillips, Viscofan's second economic witness, added little to Mr. Nehmer's flawed testimony, largely because he was singularly uninformed about the particular industry in which complainants compete. (Findings of Fact 697-701). His testimony mainly tends to

confirm the existence of competition in this industry, by listing factors indicating rivalry rather than collusion, such as market share changes and cost reduction efforts, each of which are present in the sausage casing industry. (Phillips, VRX 584; Tr. 1200-01).

My conclusion that no collusive pricing by complainants under the anti-trust laws has been shown on this record is reinforced by the opinion of Teepak's economic expert based on his evaluation of the entire record. (Haldi, Tr. 1702-03; Finding of Fact 694).

Predatory Activities

As evidence of Teepak's and Union Carbide's anticompetitive actions and intent, Viscofan asserts that Kollross, representing Kuko-Maschinenbau Kollross GmbH, a German supplier of shirring machinery, refused to deal with it because of predatory actions by Teepak and Union Carbide. In brief, the facts are that Kollross sold a skinless sausage casing shirring machine to Viscofan in 1976; the machine was shipped to Viscofan in 1977, but was returned to Kollross the same year for modification;

(Findings of Fact 588, 593-599, 605). In January 1979, Kollross informed Teepak

(VRX 145, p. 4547) and in August of that year

1. (TCX 400, 411). In December 1979,

. (TCX 400-2, 404, 406, 409; VRX 262).

1. (VRX 273). In October 1980,

(TCX 410; UCX 562). However, during this same time period, Kollross agreed

to sell Kuko-4 technology to Kalle in Germany and Fujimori in Japan. (Finding of Fact 612). In 1980, Teepak concluded that Kollross' Kuko-4 machine infringed the Arnold patent and threatened Kollross with patent enforcement actions beginning in 1982. (Findings of Fact 621-622)

. (Finding of Fact 636).

Viscofan cites the foregoing scenario as revealing the insidious efforts of Teepak and Union Carbide, acting in combination, to destroy competition and perpetuate their monopoly, particularly against Viscofan and Kollross' Kuko-4 rotating head machine. For example, Viscofan asserts

, (Findings of Fact 617, 618),

However,
this contention is not well-founded in view of the established fact that Kollross proposed making the Kuko-4 machine available to Viscofan in December 1979 to satisfy the obligation it had to Viscofan dating back to 1976. (TCX 403).

The further fact that

. (TCX 408). The additional fact
that

14/

(Finding of Fact 618).

A review of the

. (Finding of
Fact 632). However, by September 1981, as previously noted, Kollross had
already determined not to sell Viscofan any machine. (Finding of Fact
633).

. (VRX 282, p. 12423).

14/

(Finding of Fact 644).

, can hardly be classified
as anticompetitive in the context of the Sherman Act.

(VRX 336, p. 13166).

Although this language bespeaks aggressive competition, it hardly appears to be the kind of activity prohibited by the Sherman Act, manifesting an anticompetitive intent. Indeed, this is not the language of a predatory monopolist. It is, instead, language of a reasonable competitor who seeks to exploit his patents well within the purposes and intentions of the patent grants when confronted by potential competition. See United States v E.I. duPont de Nemours & Co., 118 F. Supp. 41, 51, 53 (D. Del. 1953).

. (Finding
of Fact 654).

. Yet the record shows no substantial evidence of discussions or contacts between the complainants concerning Kollross. Union Carbide knew little or nothing of the dealings between Teepak and Kollross (Bailie, Tr. 417-48), and Teepak's only information about Kollross' relationship with Union Carbide came from Kollross himself. (Finding of Fact 646). Certainly Teepak was entitled to enforce, as well as in good faith to threaten to enforce, its patent rights against infringers as it considered Kollross to be.^{15/} See Coastal Sales Marketing, Inc. v. Hunt, 697 F.2d 1358, 1367 (5th Cir. 1983); E. I. DuPont de Nemours v. Berkley & Co., Inc., 620 F.2d 1247 (8th Cir. 1980). Furthermore, Teepak's patent enforcement efforts,

, were in the independent economic self-interest of Teepak.

Not only does the evidentiary record fail to show any substantial causal link between _____ and Kollross' refusal to deal with Viscofan, there is no substantial showing that Viscofan was economically hurt or deprived by Kollross' action, whatever the motivation might have been. By 1979-1980, when Viscofan was seriously pressing Kollross

^{15/} As previously noted, Teepak concluded as early as 1980, and verified by testing a Kuko-4 machine, that Kollross' rotating head technology infringed the suit patent. (Arnold, TCX 33, pp. 14-16; Story, TCX 34, pp. 9-11).

for its machine, Viscofan was already selling its sausage casings successfully in Europe and Latin America using shirring technology it had developed and which it considered superior to Kollross' technology. (TCX 140; Valdes, UCPX 132, pp. 326-28). Moreover, the claim that Viscofan was delayed in entering the United States market is inconsistent with Valdes' testimony that Viscofan did not regard United States prices as attractive until late in 1982. (UCX 249; Valdes dep., UCPX 130, p. 237).

Finally, the coincidence of the complainants' separate interests insufficient evidence to sustain an inference of consciously parallel conduct by those parties, much less inference of collusion or conspiracy. An inference of conspiracy is always unreasonable when it is based solely on parallel behavior that can be explained as the result of the independent business judgment of the parties. Southway Theatres, Inc. v. Georgia Theatre Co., 672 F.2d 485, 494 (5th Cir. 1982). Indeed, when proof establishes a factual situation which would equally justify the conduct complained of as being motivated by independent self-interest or as to lead to an inference of conspiracy, then respondent has failed to carry its burden. Johnson v. Branch, 242 F. Supp. 721, 732 (E.D.N.C. 1965), rev'd and remanded on other grounds, 364 F.2d 177 (4th Cir. 1966), cert. denied, 385 U.S. 1003 (1967).

Negotiations to Purchase Viscofan

In further support of its predatory practices charge against complainants, Viscofan accuses Union Carbide and Teepak of engaging in sham negotiations for the purchase of Viscofan, for the purpose of denying it needed capital and to eliminate it as a competitor. (Viscofan PB, p. 61). These contentions are not sustained by a preponderance of evidence. In fact, in response to Viscofan's inquiry in 1979-1980, when it was in need of additional operating capital, Teepak representatives visited Viscofan's facility

. (Hofmann, TCX 499, pp. 65-67, 85-88; Finding of Fact 663).

. (Hofmann, TCX 499, pp. 68-69; Miller, TCX 528, vol. I, pp. 63-63).

As for Union Carbide's conduct, there were several meetings between representatives of the parties to discuss possible acquisition of Viscofan by Union Carbide. The serious discussions eventually terminated in June 1980, largely because (1) Viscofan refused to agree to an audit; (2) Union Carbide was concerned that Viscofan employees or shareholders would sell Union Carbide technology and proprietary know-how to third parties even if the purchase was made; and (3) the parties could not agree on a sale price. (Thery, UCPX 113, pp. 47, 50-51; Bailie, UCPX 142, p. 91). Although Union

Carbide may not have needed Viscofan's shirring machine technology, it considered the possible purchase of Viscofan as a way of buying back the technology it believed had been stolen from it and of settling outstanding legal differences with Viscofan. (Thery, UCPX 113, p. 34; Bailie, UCPX 142, p. 90; UCX 601-608).

Negotiations with Wolff Walsrode

During the foregoing negotiations, Union Carbide was made aware that Viscofan was discussing its possible acquisition by another party, Wolff Walsrode A.G., a German sausage casing manufacturer and subsidiary of Bayer, A.G. (Finding of Fact 670). Incident to the latter discussions, Wolff came to Union Carbide to seek a license to use the latter's twisted stick patented technology that would enable Wolff, by unblocking, in effect, to sell this and the technology it hoped to acquire from Viscofan in the major developed markets. (Finding of Fact 676). After some discussions with Wolff representatives, Union Carbide expressed no interest in granting a license to Wolff in connection with the latter's proposed acquisition of Viscofan technology. Union Carbide took the not unreasonable position that that technology in vital part had been stolen from Viscora and that Union Carbide intended to continue its legal actions against Viscofan to protect its patents and know-how. (Bailie, UCPX 142, pp. 84, 97-98; Findings of Fact 689-690).

In a later June 1980 meeting with Wolff representatives, who were trying to keep their licensing request alive, Union Carbide was invited to deal with the responsible official at Bayer, Wolff's parent Company. (Bailie, UCX 632B; UCPX 142, pp. 85-87). At a subsequent meeting with

Bayer representatives in August 1980, Union Carbide expressed surprise that Bayer would, through Wolff, buy a company that stole technology and indicated that lawsuits would continue against the persons responsible for the theft. (Findings of Fact 678, 679, 688). Despite Viscofan's charge that Union Carbide brought pressure to bear on Bayer to interfere with Wolff's possible agreement with Viscofan, Union Carbide had no relevant contractual relationships with Bayer and did not suggest to Bayer that purchase of Viscofan would adversely affect their relationship. (Stephenson, UCPX 141, pp. 13, 32, 34-35). Thereafter, Bayer vetoed Wolff's planned acquisition and in October 1980 Wolff cancelled its agreement with Viscofan. (Finding of Fact 690).

All circumstances considered, including the fact that Union Carbide had no legal obligation to grant Wolff the license it sought, I find the evidence of record insufficient to sustain Viscofan's contention that the conduct of Union Carbide or Teepak in this instance or any others alleged, separately or collectively, was predatory and intended to exclude competition within the prohibited ambit of the Sherman Act.

Viscofan's final allegation is that complainants' patent infringement threats and institution of this investigation are "part of the over-all monopolistic scheme, and demonstrate the illegality of the original patent pool." As previously noted, patent infringement suits brought in good faith do not constitute patent misuse. See, e.g., E.I. DuPont de Nemours v. Berkley & Co., 620 F.2d at 1273; Ansul Co. v. Uniroyal, Inc., 448 F.2d 872, 882 (2d Cir. 1971). Similarly, good faith warnings of infringement and threats of patent litigation do not constitute a basis for a claim of patent misuse. Coastal Sales Marketing, Inc., 697 F.2d at 1367; Outboard Marine

Corp. v. Pezetel, 474 F. Supp. 168 (D. Del. 1979). As for the present investigation, certainly any fair-minded review of the record would indicate that what is involved here is anything but a spurious or sham proceeding. Indeed, as borne out by my judgment, there is substantial evidence to show patent infringement and trade secret misappropriation by Viscofan, as alleged by complainants.

Anticompetitive Intent

The duopolistic nature of the skinless sausage casing market, dominated as it is by the complainants, requires careful consideration of Viscofan's ultimate contention that "litigation, even if based on a colorable claim of patent infringement and trade secret misappropriation, can be part of an overall scheme to monopolize or restrain trade." (Viscofan PB, p. 48). Litigation which has an improper anticompetitive purpose can be actionable under the antitrust laws without showing malice. Grip-Pak, Inc. v. Illinois Tool Works, Inc., 694 F.2d 466 (7th Cir. 1982) This precept is well stated in Kobe, Inc. v. Dempsey Pump Co., 198 F.2d 416, 425 (10th Cir. 1952), citing the Supreme Court in American Tobacco Co. v. United States, 328 U.S. 781, 809:

It is not the form of the combination or the particular means used but the result to be achieved that the statute condemns. It is not of importance whether the means used to accomplish the unlawful objective are in themselves lawful or unlawful. Acts done to give effect to the conspiracy may be in themselves wholly innocent acts. Yet, if they are part of the sum of the acts which are relied upon to effectuate the conspiracy which the statute forbids, they come within its prohibition.

Although I would not characterize complainants' conduct in protecting its patents and trade secrets as "wholly innocent acts," I have found that the alleged acts Viscofan relies on to show "bad purpose," including the cross-licensing arrangements/patent pool, the parallel pricing, and the succession of predatory activities, do not in themselves demonstrate anti-competitive conduct within the meaning of the Sherman Act. But if this underlying purpose or intent, or if the cumulative pattern or effect of these acts, is to confer on complainants the power to control prices and

exclude competition, then illegal monopolization is present. See United States v. E.I. DuPont de Nemours & Co., 118 F. Supp. at 196. Because monopoly power can be distinguished from the normal freedom of business only in degree (id.), all facts and circumstances relating to the manufacture and sale of skinless sausage casings must be considered in the light of the economic realities of the market.

The market or industry setting here has previously been recognized. The domestic skinless sausage casing market is characterized by high concentration

small likelihood of new entries because of a fairly flat, stable market and capital-intensive industry; inelastic demand; and homogeneity of product. These industry characteristics lead to a natural oligopoly with a high degree of pricing interdependence in which there is far less incentive to engage in price competition than if there had been many sellers in an expanding market. E.I. DuPont de Nemours & Co. v. F.T.C., 729 F.2d 128, 132 (2d Cir. 1984). As stated by the court in DuPont v. F.T.C.:

Although a manufacturer in an inelastic market can temporarily capture an increased market share by price reductions or secret discounts, the reductions or discounts are usually discovered and met, sooner or later by some form of competition by other producers without increasing the volume of total sales in the market. See United States v. United States Gypsum Co., 438 U.S. 422, 456 (1978). The sole effect of a price reduction in a declining, inelastic market, therefore, is to reduce the industry's total profits.

Id. at 132.

In view of these economic realities, it is reasonable to conclude, absent any clear showing of anticompetitive intent, that the conscious parallelism in the pricing pattern practiced by the complainants is due more to the

nature and condition of the market than to any intentional conspiracy to fix prices. It also follows that complainants lack the power to arbitrarily raise prices of sausage casings without regard for competitive pressures, a principal requirement or indicator of monopoly power and market control. United States v. DuPont, 118 F. Supp. at 206. (See Findings of Fact 430-432). This conclusion is also in accord with the previously discussed pricing activities of and interaction between complainants.

Thus, as stated by Judge Knox in United States v. Aluminum Company of America, 91 F. Supp. 333, 346 (S.D.N.Y. 1950), "the possession of monopoly power is something other than the status in a market of a dominant firm. The dominant firm may have neither the power to exclude competitors, nor the power to fix prices." The power of a seller, of course, is measured by the degree of power in other sellers, over their own actions, and by the effect of that power on the actions of the seller under attack. United States v. DuPont, 118 F. Supp. at 208. In other words, the fact that Teepak followed Union Carbide's prices, or vice versa, does not prove monopoly power in one or the other, since the prices charged were fairly dictated by the competitive conditions in the sausage casing market. The presence of the demonstrated market conditions also tends to blunt Viscofan's argument of collusion between complainants to fix prices, since there is a natural market tendency toward identical or parallel pricing. Similarly, Union Carbide's relatively high profits over the years do not necessarily demonstrate monopoly control over prices. Such profits are more reasonably explainable in terms of the intensive capital needs to sustain efficient business operations and to promote competitive research and development.

As for the market control allegedly achieved by the parties through their "patent pool," an agreement for cross-licensing and a purported division of royalties violates the Sherman Act only when used to effect a monopoly, to fix prices, or to impose otherwise unreasonable restraints on interstate commerce. Standard Oil Company of Indiana v. United States, 9 U.S.P.Q. 6, 11-12 (S.Ct. 1931). As previously discussed, the cross-licensing agreements here were nonexclusive in every instance and, notwithstanding the stable, inelastic market conditions, have resulted in entry of at least two licensees, Matarazzo and Kalle. Additionally, there is the prospect of increasing competition from other competitors, both domestic and foreign, using independent or other patented technology without technical assistance from complainants, e.g., Kalle. (See, p. 307, supra, n. 13).

There is also substantial evidence of record that complainants lack the power to exclude competitors over and above their rightful limited patent monopoly powers, the proper exercise of which is not prohibited by the Sherman Act. As previously noted, complainants' patents are available for licensing on a royalty basis that has not been shown to be unreasonable. In this connection, it is significant that Viscofan chose to forego the opportunity of seeking a license under the suit patent from Union Carbide when it approached Union Carbide's French subsidiary for that purpose. (UCX 596, 601).

The fact that other companies have been able to participate competitively in the market using technology not protected by patents owned by one complainant or the other and the vigorous and independent research and development programs of each complainant also tend to show no absolute

technological control by complainants in the industry. The relatively intensive price and non-price competition between the complainants, as previously discussed, has had the competitive result of substantial shifts in market shares between them over a period of years. (Finding of Fact 424). These strong pro-competitive factors substantially undercut any contention that complainants' patent cross-licensing and other practices have the power to exclude competitors. See United States v. DuPont, 118 F. Supp. at 212 (cellophane industry).

The principal legal authorities cited by Viscofan in support of its patent misuse defense are not helpful to its cause. Kobe, Inc. v. Dempsey Pump Co., 198 F.2d 416, involved assignment of all hydraulic pump patents owned by Kobe and its prime contractor to a new holding company, Roko, for a 25 year period, beginning in 1933. All future inventions or patents relating to hydraulic pumps were also assigned to Roko, with only Kobe and its prime contractor having a right to license patents from Roko. Many of the pooled patents were never utilized to manufacture hydraulic pumps, and a common price schedule was binding on any licensees under the pooled patents. The pool agreement itself provided that its purpose was to acquire patents and do everything reasonably possible to "build up and maintain its patent monopoly." Id. at 420. No other hydraulic pump was offered to the industry until 1948, when the Dempsey pump was introduced. This provoked a series of patent infringement threats by Kobe to purchasers of the new pump which adversely affected Dempsey's business. Thereafter Kobe filed a patent infringement action against Dempsey. The appellate court affirmed the trial court's judgment for Dempsey on the grounds that Kobe's suit, although brought in the good faith belief that there was

infringement, was for the "real purpose" of furthering the existing patent pool monopoly and to eliminate Dempsey as a competitor.

Although Viscofan asserts that the result in Kobe should apply in the case at bar, the two cases are clearly distinguishable on their facts. Unlike Kobe, the cross-licensees in this case are nonexclusive and not assigned to a single corporate entity which, in Kobe, had practically absolute control over licensing and pricing. The extensive nonuse of and/or nonlicensing to third parties of a growing body of patents over a 12 year period were persuasive factors to the court. They have no parallel in the instant case. Also, in Kobe there was no analysis of the Dempsey pump prior to the filing of the infringement case, whereas here there was a pre-filing analysis made which led to a conclusion of infringement as to each of the patents claimed in the complaint. (TCX 236, 335, 336, 475). In view of these critical factual differences, I cannot conclude on the basis of Kobe that complainants here should be denied relief, as was Kobe, because of the evident monopolistic purpose of Kobe's corporate patent pool arrangement.

Another case relied on by Viscofan is United States v. Singer Manufacturing Co., 374 U.S. 174 (1963), which I also find to be inapposite. In Singer, a patent cross-licensing agreement between Singer and two competing European producers of sewing machines was established essentially to more effectively protect their markets from infringing Japanese-made sewing machines. One of the European firms assigned a key patent to Singer for the express purpose of facilitating more effective enforcement of the patent against Japanese competition in the United States.

The Supreme Court found an illegal "overall common design" to eliminate Japanese competition. This holding was based, in part, on the Court's finding that the assignment of the key patent to Singer could not have been for the purpose of resolving patent disputes, since a previous license of the key patent had assured Singer that it could produce and sell its machines. Id. at 195. Accordingly, the Court found that the "controlling factor" in the assignment of the key patent to Singer was the destruction of "the Japanese sale of infringing machines in the United States by placing the patent in Singer's hands, the better to achieve this result." The Court further held that Singer's initiation of a Section 337 suit before the U.S. Tariff Commission seeking exclusion of the Japanese sewing machines was part of the same illegal scheme to suppress Japanese sewing machine competition in the United States.

The facts in the case at bar are clearly distinguishable from those in Singer. Unlike the anticompetitive purpose of the key patent assignment in Singer, the cross-licensing of the patents between complainants, as previously discussed, were entered into for the most part to serve a legitimate and genuine dispute settlement or avoidance purpose, such as resolving blocking patent situations, rather than explicitly or implicitly to destroy particular competitors. On the basis of this critical factual difference, among others, I find no controlling precedent in Singer for fairly deciding Viscofan's patent misuse defense here.

Finally, the question arises whether, quite apart from the Sherman Act, the unfair methods of competition provision of § 337 can be violated by noncollusive, nonpredatory and independent conduct of a nonartificial

nature, if it results in a substantial lessening of competition, as alleged by Viscofan. Although Viscofan does not directly raise this question and has not, in my opinion, shown that the complainants' conduct has substantially lessened competition in the skinless sausage casing industry, some comments on this relevant question seem warranted.

My compass in this matter is

DuPont v. F.T.C., 729 F.2d 128, wherein the Second Circuit addressed the same question with respect to § 5 of the Federal Trade Commission Act, 15 U.S.C. § 45(c). This section is closely related to § 337 of the Tariff Act of 1930, as amended.^{16/}

The F.T.C. case involved the two largest manufacturers of lead anti-knock gasoline additives who were accused of violating § 5 by having independently engaged at different times in three business practices that were neither restrictive, predatory, nor adopted for the purpose of restraining competition. These practices included: (1) the sale of the product at a delivered price, including transportation costs; (2) two firms giving extra advance notice of price increases, over and above 30 days provided by contract; and (3) use by the same two firms of a "most favored nation" clause under which the seller promised that no customer would be charged a higher price than other customers.

Recognizing that it was dealing with an oligopolistic industry, the court noted:

^{16/} Section 5 of the F.T.C. Act provides in pertinent part:

Unfair methods of competition in or affecting commerce, and unfair or deceptive acts or practices in or affecting commerce, are declared unlawful. 15 U.S.C. § 45(a)(1).

The term "unfair" is an elusive concept, often dependent upon the eye of the beholder. A line must ... be drawn between conduct that is anticompetitive and legitimate conduct that has an impact on competition. Lessening of competition is not the substantial equivalent of unfair methods of competition. Section 5 is aimed at conduct, not at the result of such conduct, even though the latter is usually a relevant factor in determining whether the challenged conduct is "unfair."

(729 F.2d at 138). In other words, the Court was concerned that the formulation of standards for determining the meaning of "unfair" within the terms of § 5 "discriminate between normally accepted business behavior and conduct that is unreasonable or unacceptable." Seeking to provide "workable rules of law" to the F.T.C. for administration of § 5, the Court ruled:

In our view, before business conduct in an oligopolistic industry may be labelled "unfair" within the meaning of § 5 a minimum standard demands that, absent a tacit agreement, at least some indicia of oppressiveness must exist such as (1) evidence of anticompetitive intent or purpose on the part of the purchaser charged, or (2) the absence of an independent legitimate business reason for its conduct. If, for instance, a seller's conduct, even absent identical behavior on the part of its competitors, is contrary to its independent self-interest, that circumstance would indicate that the business practice is "unfair" within the meaning of § 5.

Id. at 139-140.

Applying this standard to the facts in F.T.C., the Court found, as I find in the present case, no evidence of collusive, coercive or predatory conduct. It further found no substantial evidence of record "that the challenged practices significantly lessened competition in the antiknock industry or that the elimination of those practices would improve competition." By analogous reasoning, I find in the present record no substantial evidence of collusive, coercive, or predatory conduct on the part of complainants.

Nor do I find any evidence that in the actions complained of, complainants ever acted contrary to their independent self-interest. It also has not been shown that the challenged practices significantly lessened competition in the skinless sausage casing industry or that the elimination of those practices would improve competition.

Accordingly, I conclude that Viscofan has failed to sustain its burden of proving its alleged affirmative defenses, based on the equitable doctrines of unclean hands and patent misuse.

Importation and Sale

Pursuant to Viscofan's 1983 contract with Hygrade, Viscofan has shipped approximately cases of skinless sausage casings to the United States to Hygrade's Brechteen Division. (Findings of Fact 702-705). This quantity of casings has a commercial value of about . (Finding of Fact 706). Under the terms of this contract, Brechteen used this shipment from Viscofan for testing purposes, although the frankfurters manufactured as a result of these tests had a commercial value of about . (Findings of Fact 707-708).

Since Brechteen was sold by Hygrade to Naturin, together with the contract with Viscofan, it is alleged that Hygrade has no remaining inventory of Viscofan casings. (See Pending Motions, supra, pp. 7-8). Further, Viscofan has voluntarily agreed not to import additional quantities of casing pending the outcome of this investigation. (Findings of Fact 816-818).

Domestic Industry

In order to prove a violation of § 337, the complainant must establish that the alleged unfair methods of competition have the effect or tendency "to destroy or substantially injure an industry, efficiently and economically operated in the United States" 19 C.F.R. § 1337(a).

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When the unfair acts or methods of competition alleged under § 337 are based on the infringement of patent rights, the Commission has customarily defined the domestic industry as consisting of the domestic operations of the patentee and any of its licensees devoted to the exploitation of the teachings of the patent at issue which is the target of the unfair acts or practices. Certain Molded-In Sandwich Panel Inserts and Methods for their Manufacture, Inv. No. 337-TA-99 (1982) (Sandwich Panel Inserts); Certain Methods for Extruding Plastic Tubing, Inv. No. 337-TA-110, 218 U.S.P.Q. 348 (1982) (Plastic Tubing); Certain Slide Fastener Stringers, Inv. No. 337-TA-85, 216 U.S.P.Q. 907 (1981); Trade Reform Act of 1973: Report of the House Committee on Ways and Means, H. Rep. No. 93-571 at 78, 93rd Cong. 1st Sess. (1973). Exploitation of patent rights may include domestic production and manufacture, development, servicing, licensing, and sale of the patented product. Plastic Tubing, supra; Sandwich Panel Inserts, supra; Certain Spring Assemblies and Components Thereof and Methods for Their Manufacture, Inv. No. 337-TA-88, 216 U.S.P.Q. 225 (1981) (Spring Assemblies).

In the present investigation, Teepak is the owner of the '484 patent and has licensed the use of said patent to Union Carbide. Union Carbide is the sole domestic licensee under the '484 patent. Both Teepak and Union Carbide practice the '484 patent in the United States. (Finding of Fact 709, 710).

Teepak

Teepak's business is comprised of the manufacture, distribution and sale of various types of meat casings including skinless sausage casings, the subject of the present investigation. (Finding of Fact 3). Teepak employs approximately persons, of which approximately are production workers. (Finding of Fact 712). percent of those production workers, approximately , are engaged in the manufacture of skinless sausage casings. (Finding of Fact 712). Teepak manufactures its line of skinless sausage casings at its Danville, Illinois facility. (Finding of Fact 741). Within this facility, approximately square feet, percent, are devoted to the manufacture of skinless sausage casings. (Finding of Fact 711). Teepak maintains service center/warehouses at various locations in the United States. (Finding of Fact 714). Teepak's corporate headquarters and sales division are located in Chicago, Illinois. (Finding of Fact 715).

Based on the evidence of record, I find that a domestic industry exists which is comprised, in part, of those portions of Teepak's domestic facilities devoted to the manufacture, distribution and sale of skinless sausage casings.

Union Carbide

As the result of a settlement agreement reached between Teepak and Union Carbide in 1967, Union Carbide obtained a license under the '484 patent. (Finding of Fact 710). Presently, Union Carbide is the sole domestic licensee under the '484 patent. (Finding of Fact 710). The propriety of including the domestic operations of Union Carbide in the definition of the domestic industry in patent-based § 337 proceedings has been established. See, e.g., Schaper Manufacturing Co. v. U.S. International Trade Commission, 717 F.2d 1360, 1371-72 (Fed. Cir. 1983) (Schaper) and cases cited therein. Consequently, Union Carbide, as a domestic licensee, is part of the relevant domestic industry for the manufacture, distribution, and sale of skinless sausage casings manufactured in accordance with the '484 patent.

Union Carbide maintains five facilities in the United States for the production and or finishing of skinless sausage casings. (Findings of Fact 716-718). The headquarters of Union Carbide's Films Packaging Division is located in Chicago, Illinois. This site is also the location of Union Carbide's first extrusion facility constructed in 1934. (Finding of Fact 717). In addition, Union Carbide maintains eight service centers throughout the United States, four of which are located at its manufacturing facilities. (Finding of Fact 717). Union Carbide distributes its product line through its service centers. (Finding of Fact 748). The use of these centers as distribution points for skinless sausage casings has enabled Union Carbide to reduce shipping time significantly. (Finding of Fact 748).

Union Carbide utilizes the most up to date machinery and equipment in its manufacturing facilities for the production of skinless sausage casings.

(Finding of Fact 734). Over the years, Union Carbide has continued to modernize and expand its older facilities. (Finding of Fact 745-746). As a result of these efforts, Union Carbide has been able to increase production capacity. Presently, Union Carbide is capable of producing pounds of skinless sausage casings annually. (Finding of Fact 728, 741-743).

Union Carbide spends millions of dollars annually on research and development, quality control and capital equipment and machinery. (Finding of Fact 736, 740, 745-746). Union Carbide's fixed investment for its casing business exceeded as of December 1982. (Finding of Fact 735). The estimated replacement cost of Union Carbide's facilities and equipment related to the manufacture of casings exceeds . (Finding of Fact 735). Although these figures do not relate exclusively to the production of skinless sausage casings, they are, nevertheless, relevant and thus warrant inclusion in the definition of the domestic industry. See, e.g., Certain Headboxes and Papermaking Machine Forming Sections for Continuous Production of Paper and Components Thereof, Inv. No. 337-TA-82, RD at 109 (1981) (Headboxes).

In sum, the domestic industry in Inv. No. 337-TA-148 is comprised of the domestic facilities of Teepak and Union Carbide devoted to the manufacture, distribution, and sale of skinless sausage casings manufactured in accordance with the teachings of the '484 patent.

When the unfair acts or methods of competition alleged under § 337 are based on the misappropriation of trade secrets, the domestic industry is defined as consisting of that portion of complainant's domestic operations devoted to utilization of the confidential and proprietary technology at issue which is the target of the unfair acts or practices. See, e.g., Schaper, 717 F.2d 1360; Copper Rod, supra, RD at 94; Certain Ultra-Microtome Freezing Attachments, Inv. No. 337-TA-10, 195 U.S.P.Q. 653 (1976).

In the present investigation, Union Carbide claims as a trade secret the overall integrated sausage casing manufacturing operation as practiced in its several plants throughout the United States. The specific trade secrets at issue include Union Carbide's: (1) carryover or tower; (2) extrusion nozzle and mandrel assembly; (3) chemical, quality control and manufacturing standards and specifications; (4) overall shirring machine configuration; (5) construction of the commercial version of the shirring head assemblies; (6) external configuration and construction of the shirring mandrels; and (7) shirring mandrel internal spray system. (See Opinion, Misappropriation of Trade Secrets, supra).

Union Carbide contends that no other domestic producer utilizes its confidential and proprietary technology, and that as such the domestic industry consists of that portion of its business in the United States which is using the confidential and proprietary technology at issue. (Union Carbide PB, p. 17).

The record reveals that although the 1967 Agreement between Teepak and Union Carbide included provision for exchange of know-how, that the

know-how exchange was never fully carried out, and that Teepak essentially did not use the know-how received from Union Carbide. (Findings of Fact 533-538, 549). There is nothing on the record to indicate that any other domestic company is making use of the trade secrets at issue. Thus, for purposes of the trade secret phase of this investigation, the domestic industry is defined to include only the domestic operations of Union Carbide's Films-Packaging Division utilizing the trade secrets at issue.

Viscofan asserts that many of the trade secrets allegedly misappropriated from Union Carbide's subsidiary, Viscora, are not in use in the United States, either because of certain differences in the end product between Europe and the United States which affect the manufacturing process, or because of changes in standards since the time of the alleged misappropriation. To the extent that these arguments bear on the existence of each trade secret, they have been considered, in the consideration of the appropriate trade secret, supra.

It is established on this record that Viscora received essentially all of its sausage casing technology from Union Carbide, including machinery and drawings, and has substantially maintained it in the same fashion as Union Carbide's domestic technology. (Findings of Fact 719-727). Although in some instances Viscora has made adjustments in the standards received, in no instance can it be said that the adjustment was not initially based on the fundamental technology received from the United States.

The essential element to be considered in this respect is the development of standards and specifications over time, which results in

propriety information, the secrecy of which confers a competitive advantage on the trade secret owner. Many of these standards and specifications are dynamic, in that adjustments must be made to accommodate customer needs, or changes in other variables. The inherent dynamics of this process cannot be said to result in a forfeiture of the earlier standards, on which any alterations must of need be based.

In the present circumstances it is clear tht the technology misappropriated from Viscora is in essence the same technology in use in the United States, and that this technology was originated in the United States. Thus, I find that there is a domestic industry for the trade secrets at issue, and that this industry is substantially coextensive with the description of Union Carbide's operations already described in connection with the '484 patent.

Efficient and Economic Operation

In order to prevail under § 337, complainant must establish that the relevant domestic industry is efficiently and economically operated. The traditional guidelines set forth by the Commission to assess efficient and economic operation include: the use of modern equipment; effective quality control programs; profitability of the relevant product line; increased productivity; and expenditures for research and development. Spring Assemblies, supra; Certain Heavy Duty Staple Gun Tackers, Inv. No. 337-TA-137 (1983); Certain Stabilized Hull Units and Components Thereof, Inv. No. 337-TA-103 (1982); Certain Coin Operated Audio-Visual Games and Components Thereof, Inv. No. 337-TA-105, 216 U.S.P.Q. 1106 (1982).

Teepak

In recent years Teepak has implemented a number of modifications and improvements in an effort to make its operations more economic and more efficient. Teepak has an established history of maintaining its manufacturing facilities in good condition and has devoted adequate funds to capital spending.

In 1983, Teepak spent on capital equipment for its Danville, Illinois production facility. (Finding of Fact 756). Likewise, in 1984, Teepak estimates that it will spend in excess of on capital equipment and machinery. (Finding of Fact 756). Through substantial expenditures for capital equipment over the years, Teepak has increased its productivity by percent since 1964. (Finding of Fact 763). Presently, Teepak is capable of producing meters of skinless sausage casings annually. (Finding of Fact 728). In 1983, actual

production of skinless sausage casings was meters which represented approximately percent of capacity. (Finding of Fact 729). Of this number, Teepak sold meters, representing a market share of percent. (Finding of Fact 730). The dollar value of those skinless sausage casings sold in 1983 exceeded . (Finding of Fact 730). Gross profits from the sale of skinless sausage casings for the first half of 1983 were . (Finding of Fact 733).

A comparison of the evidence of record reveals that domestic sales since 1981 have been consistently less than domestic production. This difference is accounted for mostly by exports and to a lesser extent by changes in inventory. (Finding of Fact 778). The difference between capacity and actual production and sale can be attributed to a general decline in the domestic production of hot dogs as a result of the growing public concern over additives in hot dogs. (Finding of Fact 779).

Prior to 1970, Teepak made all of its cellulose casings from

(Finding of Fact 759).

. (Finding of Fact 760).

Since 1981, Teepak's market share has percent of sales to percent. (Finding of Fact 730).

The record reveals continuous efforts, over the years, on the part of Teepak to improve the quality of its line of skinless sausage casings. In 1982, Teepak completed a program to reduce breakage and improve performance of their casing in meat packer's plants. As a result of this program the number of casing defects has been reduced from of strands tested to . (Finding of Fact 766). During the period 1981 to June 1983, Teepak spent in excess of for research and development. (Finding of Fact 711).

Through the use of , Teepak has been able to more accurately assess the quality of its casings. (Findings of Fact 768-769). Teepak's computerized . (Finding of Fact 770). The uniformity of casing width is necessary to avoid the problem of producing hot dogs which are either under or overweight. (Finding of Fact 767). The importance of achieving is magnified when considering the profit margin of meat stuffers.^{17/}

Teepak distributes its line of skinless sausage casings through its four regional service center/warehouses. (Findings of Fact 714, 772). The use of service center/warehouses as a distribution point enables larger shipments to be sent in bulk at lower freight rates to points relatively close to the customer. (Finding of Fact 772).

. (Finding of Fact 773-774).

^{17/} Meatpackers' profit margins generally amount to only a small percentage on sales prices, and cost of the meat product is an important part of their total cost. In 1979, median net profits on net sales were 2.28 percent for a sample of 144 sausage and prepared meat plants (SIC Code 2013). Dun & Bradstreet's 1980 Key Business Ratios, p. 18.

Thus, the record is replete with instances of Teepak's efforts to improve the quality of its product line, the productivity of its manufacturing and distribution facilities, and the overall efficiency of its domestic operations.

Union Carbide

One indication of the efficiency of Union Carbide's domestic operation is that it has always competed successfully against Teepak and still retains the majority share of the United States market. (Finding of Fact 730).

Union Carbide operates five plants in the United States for the production and/or finishing of skinless sausage casings. (Finding of Fact 716). Within each facility the most modern, up-to-date automated equipment is utilized for the production of skinless sausage casings. (Finding of Fact 734). As of 1982, Union Carbide's fixed investment for its casing business exceeded . (Finding of Fact 735).

Union Carbide continues to invest substantially in the production of skinless sausage casings. Over the last ten years, expenditures for research and development have exceeded . (Finding of Fact 736). In 1983 alone, Union Carbide spent for research and development. (Finding of Fact 736). Union Carbide's efforts to improve its equipment and technology has made it easier for the meat products industry to reduce their costs through automation. (Finding of Fact 737). These efforts not only benefit Union Carbide but also its wholly owned subsidiaries which produce skinless sausage casings in other countries. (Finding of Fact 720-721, 725, 727).

Union Carbide has continued to update and expand its facilities over the years. During the period 1965-1975, Union Carbide replaced all of the extrusion equipment in its Chicago, Illinois facility, originally constructed in 1934. (Finding of Fact 745). Similarly, Union Carbide's Loudon, Tennessee facility, completed in 1957, has been updated and expanded. (Finding of Fact 746). As a result of Union Carbide's modernization efforts, it has been able to improve productivity and increase its production capacity. (Findings of Fact 741, 743).

Union Carbide is presently capable of producing _____ pounds of skinless sausage casings annually. When converted to meters, this quantity represents an annual capacity of approximately _____ meters. (Finding of Fact 728). In 1983, Union Carbide produced _____ meters of skinless sausage casings which represented approximately _____ percent of capacity. (Finding of Fact 729). Of this amount, Union Carbide sold _____ meters, representing a market share of _____ percent. (Finding of Fact 730). The dollar value of those skinless sausage casings sold exceeded _____. (Finding of Fact 730). In 1982, Union Carbide's net profit before taxes was approximately _____. In 1983, net profit before taxes was _____. The apparent decline in profits from 1982 to 1983 is attributable to a change in Union Carbide's accounting methods with respect to allocation of corporate-wide interest expenses. (Finding of Fact 732).

In the area of quality control, Union Carbide has established an extensive program in connection with its production of skinless sausage casings. Each production facility maintains its own quality control program in addition to the central quality control group located

at Union Carbide's Chicago headquarters. (Findings of Fact 738-739). Each plant is required to test a certain number of casings weekly and to submit reports describing the percentage of casings that fall within the quality standards prescribed by Union Carbide. (Finding of Fact 739). Union Carbide performs annually more than 4 million tests on skinless sausage casings. In 1983, the cost of such testing was \$3.6 million. (Finding of Fact 740).

The success of Union Carbide's Films Packaging Division is due in part to the variety of services it offers to its customers. Included among these services are public relations campaigns to promote the consumption of hot dogs, product innovations such as

and providing consultants to assist manufacturers in solving technological problems. (Findings of Fact 749-751). In addition, Union Carbide's Food Service Institute assists customers by developing and improving methods of sausage and smoked meat production as well as developing new sausage products. (Finding of Fact 752-753).

Union Carbide distributes its line of skinless sausage casings through various service centers throughout the United States. (Finding of Fact 747). Union Carbide's distribution network has been highly successful in reducing shipping times. In 1983, percent of all orders placed with Union Carbide were shipped to the customer on the same day as the order was placed. (Finding of Fact 748).

Respondent Viscofan, in its post hearing brief has not challenged the existence of a domestic industry with respect to the industry defined

by exploitation of the '484 patent, nor has it challenged the efficient and economic operation of both Union Carbide's and Teepak's domestic facilities. In the absence of such a challenge, I must conclude that Viscofan has conceded the present issue.

Based on the evidence of record and the absence of any challenge on the part of respondent, I find that the domestic industry as defined herein is efficiently and economically operated.

Injury

In order to prevail in a § 337 action, complainant must show that the importation and sale of skinless sausage casings has "the effect or tendency ... to destroy or substantially injure" the domestic industry, 19 U.S.C. § 1337(a). This element requires proof separate and independent from proof of an unfair act. Further, complainant must establish a causal relationship between respondent's alleged unfair acts and the injury suffered as a result of such acts. Certain Spring Assemblies and Components Thereof and Methods of Their Manufacture, Inv. No. 337-TA-88, at 43-44, 216 U.S.P.Q. 225, 243 (1981) (Spring Assemblies).

Substantial Injury

Several factors are relevant to a determination of injury to the domestic industry, including: (1) lost customers; (2) declining sales; (3) volume of imports; (4) decreased production and profitability; (5) level of market penetration by imports; and (6) substantial foreign capacity to increase exports. Certain Drill Point Screws for Drywall Construction, Inv. No. 337-TA-166, at 18 (1982); Spring Assemblies, *supra*, at. 42-49, 216 U.S.P.Q. at 242-45; Certain Flexible Foam Sandals, Inv. No. 337-TA-47, RD at 4 (1979); Certain Roller Units, Inv. No. 337-TA-44, at 10, 208 U.S.P.Q. 141 (1979); Certain Reclosable Plastic Bags, Inv. No. 337-TA-22, 19 U.S.P.Q. 674 (1977) (Reclosable Plastic Bags).

The record reveals that as of June 1983 Viscofan exported approximately cases of skinless sausage casings to the United States. (Findings of Fact 785, 787). A majority of those casings imported by the Brechteen Division were sold to Hygrade Food Products Corporation. (Finding of Fact

786). The dollar value of those casings imported is estimated to exceed

. (Findings of Fact 791-792). Although the record reveals the sale of additional imported skinless sausage casings to the the exact value of those casings imported has not been established. (Finding of Fact 790).

In 1983, sales of skinless sausage casings in the United States amounted to approximately . (Finding of Fact 834). In light of this volume of sales, Viscofan's importation, through Brechteen, of some cases of casings, valued at approximately , is de minimis in comparison to the total size of the market. This minimal volume of imports, which were predominantly used for testing purposes, taken together with Viscofan's voluntary agreement not to import any additional casings during the pendency of this investigation, militates against a finding that either domestic industry has suffered any present substantial injury as a result of these importations. (Findings of Fact 816-818).

Tendency to Substantially Injure

When an assessment of the market in the presence of the accused imported product demonstrates relevant conditions or circumstances from which probable future injury can be inferred, a tendency to substantially injure the domestic industry has been shown. Certain Combination Locks, Inv. No. 337-TA-45, RD at 24 (1979). Relevant conditions or circumstances may include foreign cost advantage and production capacity, ability of the imported product to undersell complainant's product, or substantial manufacturing capacity combined with the intention to penetrate the United States market. Certain Methods for Extruding Plastic Tubing, Inv. No. 337-TA-110, 218 U.S.P.Q. 348 (1982); Reclosable Plastic Bags, *supra*; Panty Hose, Tariff Commission Pub. No. 471 (1972). The legislative history of § 337 indicates that "[w]here unfair methods and acts have resulted in conceivable loss of sales, a tendency to substantially injure has been established." Trade Reform Act of 1973, Report of the House Comm. on Ways and Means, H. Rep. No. 93-571, 93rd Cong., 1st Sess., at 78 (1973), citing In re Von Clemm, 108 U.S.P.Q. 371 (C.C.P.A. 1955). See also Bally/Midway Mfg. Co. v. U.S. International Trade Commission, 219 U.S.P.Q. 97, 102 (C.A.F.C. 1983).

The United States market for skinless sausage casings is characteristically mature and stagnant. This essentially flat market is due in part to the limited and already defined commercial use of skinless sausage casings. (Findings of Fact 836, 839). The demand for skinless sausage casings, itself extraordinarily inelastic, is a function of the demand for hot dogs. (Finding of Fact 840). The production of hot dogs over the past few years has shown a steady decline as a result of the growing

public concern over additives in hot dogs. (Findings of Fact 779, 837).

In the presence of such market conditions, the likelihood of expanding the United States market through sales of imported skinless sausage casings is highly improbable. Thus, any sale of imported skinless sausage casings will be achieved at the expense of the domestic industry. (Findings of Fact 841-843). The evidence of record reveals an intent on the part of Viscofan to penetrate and capture a substantial portion of the United States market, and the capacity to realize such an intent.

The record indicates that in 1982, Viscofan increased its annual production capacity by as much as in preparation for its entry into the United States market. (Finding of Fact 844). It is estimated that presently, Viscofan is capable of producing approximately meters annually and anticipates increasing that capacity by the end of 1984. (Finding of Fact 844). Viscofan's present capacity, were it to be entirely directed to the United States market, is capable, of satisfying approximately percent of the United States market for skinless sausage casings. (Findings of Fact 730, 844, 861). In the absence of an exclusion order, Viscofan intends to increase its annual capacity by as much as meters. (Finding of Fact 861). The resources necessary to fund such an undertaking are available to Viscofan. These resources are derived in part from the substantial profits obtained from the sale of casings in other countries, in addition to the . (Findings of Fact 845-852).

In sum, Viscofan has the wherewithal to produce a substantial quantity of skinless sausage casings for exportation to the United States and is prepared to expand its current production capacity for the purpose of

penetrating the United States market. As discussed below, Viscofan also has the ability to distribute such casings throughout the United States.

In March of 1983, Viscofan and Hygrade Food Products Corp. entered into an agreement naming Hygrade's Brechteen Division, one of the leading domestic food casing distributors, as the exclusive U.S. distributor of Viscofan's line of skinless sausage casings. (Finding of Fact 782). The agreement calls for the production and exportation of between

meters annually. (Finding of Fact 784). In connection with the sale of Brechteen to Naturin/Werk Becker, this agreement was valued at

. (Finding of Fact 783). Under the terms of the agreement, importation of Viscofan casings was to commence in March of 1983. However, importation has been postponed pending the outcome of the present investigation. (Findings of Fact 810, 818, 820).

In 1982,

. In addition to the importation of some cases of Viscofan casings for testing purposes,

. (Findings of Fact 795-796). The president of Brechteen was formerly the head of National Accounts for Union Carbide, and as a result has established numerous contacts in the meatpacking industry. (Finding of Fact 804).

(Finding of Fact 813, 830-832). In any event, Viscofan intends to export its product to the United States with or without the assistance of Brechteen. (Finding of Fact 827).

In preparation for entry into the United States market, Viscofan has registered its casings with the Food and Drug Administration. (Finding of Fact 823). An analysis of the U.S. market prepared by Viscofan projected a market penetration of approximately percent by 1988. (Finding of Fact 829). Brechteen and Viscofan acknowledge a more conservative estimate of approximately percent U.S. market penetration by 1986. (Findings of Fact 825, 830). Brechteen estimates that its profits for the distribution of imported skinless sausage casings over a five-year period will

. (Finding of Fact 835).

In sum, the potential and incentive to capture a significant portion of the domestic industry is apparent. The efforts by Brechteen in collaboration with Viscofan have generated widespread interest in the purchase of imported skinless sausage casings and as a result Viscofan has established sufficient contacts in the meatpacking industry to proceed without any further assistance from Brechteen.

The manufacture of skinless sausage casings is a capital intensive market. Teepak and Union Carbide incur substantial fixed costs which would persist even if their volume of sales were to decrease. (Finding of Fact 853). A relatively small decrease in domestic sales would have a disproportionate impact on profitability.

. (Finding of Fact 854).

. (Finding of Fact 854,
855).

Another factor warranting consideration is the present . The domestic industry is presently operating at between percent of capacity. (Finding of Fact 856). The sale of imported skinless sausage casings would result in a reduction in domestic capacity utilization. (Finding of Fact 857). In light of the present market conditions, which are not likely to improve due to the nature of the market, even a modest penetration of between percent by Viscofan would have a substantial impact on the domestic industry. (Findings of Fact 854-860).

A final factor to be considered in determining whether a tendency to substantially injure the domestic industry exists is the potential effect on the industry resulting from the sale of skinless sausage casings produced in accordance with the teachings of the '484 patent prior to its expiration. See, e.g., Georgia-Pacific Corp. v. United States Plywood Corp., 166 U.S.P.Q. 235, 242-43 (S.D.N.Y. 1970), cert. denied, 404 U.S. 870 (1971), modified on other grounds, 446 F.2d 295 (2d Cir. 1971); Certain Amorphous Metal Alloys and Amorphous Metal Articles, Inv. No. 337-TA-143, ID at 136 (1984).

This consolidated investigation is based on both patent infringement and misappropriation of trade secrets, thus suggesting that ultimate consideration of an appropriate remedy will be based on both unfair acts. Although the issue of remedy is not a matter before this presiding officer, the timing of Viscofan's potential entry into the United States market in the event of an exclusion order, based on the expiration of the '484 patent, affects consideration of the issue of tendency to injure the domestic industry.

The '484 patent issued in 1969 and will expire in 1986. (Finding of Fact 29). In the event that any exclusion orders were based on the patent alone, Viscofan would be eligible to enter the market in 1986. If Viscofan were to enter the United States market immediately, rather than in 1986, that two-year period would enable it to gain a substantial market share. It has been calculated that in a two-year period, based on Viscofan's arrangements with Brechteen, it would be able to capture between percent of the United States market. This market share would be directly at the expense of Teepak and Union Carbide. (Findings of Fact 831-834, 854, 855, 857-859). It is estimated that a percent market share would be equivalent to dollar sales of approximately million. (Finding of Fact 860). Thus, assuming a gradually increasing total market share for Viscofan upon entering the domestic market, entry in 1984 rather than 1986 would give Viscofan an earlier foothold in the market and result in immediate and gradually expanding loss of market share to Teepak and Union Carbide.

On the basis of the foregoing considerations, I find that the importation into and sale in the United States of Viscofan's skinless sausage casings would have the tendency to substantially injure the relevant domestic industries.

CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the parties to and the subject matter of this investigation. 19 U.S.C. § 1337(b).
2. U.S. Letters Patent 3,461,484 is valid and enforceable. 35 U.S.C. §§ 282, 112.
3. U.S. Letters Patent 3,461,484 is not invalid or unenforceable by reason of misuse of the patent in violation of the antitrust laws or by reason of unclean hands.
4. The processes utilized by respondent Viscofan in the manufacture of skinless sausage casings infringe claims 1, 2, 3 and 5 of U.S. Letters Patent 3,461,484. 35 U.S.C. § 271(a).
5. Patent infringement is an unfair act or method of competition under 19 U.S.C. § 1337(a). In re Von Clemm, 108 U.S.P.Q. 371 (C.C.P.A. 1955).
6. Complainant Union Carbide is the owner of certain confidential and proprietary technology which it utilizes in the extrusion and shirring of skinless sausage casings, as follows:
 - a. Union Carbide has a trade secret in its extrusion tower or carryover;
 - b. Union Carbide has a trade secret in certain aspects of its extrusion nozzle and mandrel assembly;
 - c. Union Carbide has a trade secret in its chemical, quality control and manufacturing standards and specifications;

- d. Union Carbide has a trade secret in certain aspects of its shirring head assembly and lubrication system;
 - e. Union Carbide has a trade secret in certain aspects of the external configuration and construction of its shirring mandrel; and
 - f. Union Carbide has a trade secret in certain aspects of its shirring mandrel internal spray system.
7. Union Carbide does not have a trade secret in its overall shirring machine configuration.
8. Viscofan has misappropriated certain proprietary and confidential technology from Union Carbide via its French subsidiary, Viscora, as follows:
- a. Viscofan has misappropriated Union Carbide's trade secret in its extrusion tower or carryover;
 - b. Viscofan has misappropriated certain aspects of Union Carbide's trade secret in its extrusion nozzle and mandrel assembly;
 - c. Viscofan has misappropriated certain of Union Carbide's trade secrets in its chemical standards and manufacturing specifications;
 - d. Viscofan has misappropriated certain aspects of Union Carbide's trade secret in its shirring head assembly and lubrication system;
 - e. Viscofan has misappropriated certain aspects of Union Carbide's trade secret in the external configuration and construction of its shirring mandrel; and

- f. Viscofan has misappropriated certain aspects of Union Carbide's trade secret in its shirring mandrel internal spray system.
9. There is no proof that Viscofan has misappropriated Union Carbide's trade secrets in its quality control standards or certain aspects of its manufacturing standards.
10. Misappropriation of trade secrets is an unfair act or method of competition under 19 U.S.C. § 1337(a). Certain Apparatus for the Continuous Production of Copper Rod, Inv. No. 337-TA-52, 206 U.S.P.Q. 138 (ITC 1979).
11. In Inv. No. 337-TA-148, there is a relevant domestic industry comprised of the domestic operations of Teepak and Union Carbide devoted to the manufacture, distribution and sale of skinless sausage casings produced in accordance with the process claimed in U.S. Letters Patent 3,461,484.
12. In Inv. No. 337-TA-169, there is a relevant domestic industry comprised of the domestic operations of Union Carbide devoted to the manufacture, distribution and sale of skinless sausage casings produced with the confidential and proprietary technology owned by Union Carbide.
13. The relevant domestic industries are efficiently and economically operated.
14. In the event that Viscofan's skinless sausage casings are imported into the United States, there will be a tendency to substantially injure the relevant domestic industries.
15. There is a violation of Sections 337 and 337a.

INITIAL DETERMINATION AND ORDER

Based on the foregoing findings of fact, conclusions of law, the opinion, and the record as a whole, and having considered all of the pleadings and arguments presented orally and in briefs, as well as proposed findings of fact and conclusions of law, it is the Presiding Officer's DETERMINATION that there is a violation of Section 337 and Section 337a in the unauthorized importation into and sale in the United States of the accused skinless sausage casings.

The Presiding Officer hereby CERTIFIES to the Commission the Initial Determination, together with the record of the hearing in this investigation consisting of the following:

1. The transcript of the hearing, with appropriate corrections as may hereafter be ordered by the Presiding Officer; and further,
2. The Exhibits accepted into evidence in the course of the hearing, as listed in the Appendix attached hereto.

The pleadings of the parties are not certified, since they are already in the Commission's possession, in accordance with the Commission Rules of Practice and Procedure.

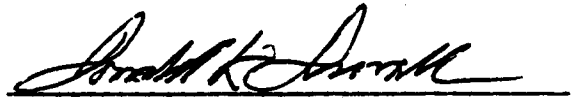
Further it is ORDERED that:

1. In accordance with Rule 210.44(b), all material heretofore marked in camera by reason of business, financial, and marketing data found by the Presiding Officer to be cognizable as confidential business information under Rule 201.6(a) is to be given five-year in camera treatment from the date this investigation is terminated;

2. The Secretary shall serve a public version of this Initial Determination upon all parties of record and the confidential version upon all counsel of record who are signatories to the protective order issued by the Presiding Officer in this investigation;

3. Motion 148/169-27, Motion 148/169-29, and Motion 148/169-30 are granted as provided in this Initial Determination.

4. This Initial Determination shall become the determination of the Commission thirty (30) days after the service thereof, unless the Commission, within thirty (30) days after the date of filing of the Initial Determination shall have ordered review of the Initial Determination or certain issues herein pursuant to 19 C.F.R. 210.54(b) or 210.55 or by order shall have changed the effective date of the Initial Determination.


Donald K. Duvall
Administrative Law Judge

Issued: July 31, 1984.

