WORLD WIDE STRATEGY

CAPACITOR-DIELECTRIC
AROCLOR

May 1, 1966

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DSW 201216

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World Wide Strategy
Capacitor-Dielectric Aroclor

I. The Market Situation

A. Global Market for Capacitor Aroclor

The world-wide market for dielectric Aroclor used in capacitors was estimated to be in excess of 16,000 tons per year (for the year 1964) or approximately 35,000,000 lbs. per year. This market is projected to increase to over 22,000 tons or nearly 50,000,000 lbs. per year by 1970.

Fixed paper capacitors with Aroclor are widely used in industrial applications. These units fill a special market need and are almost always specified for the various applications (where they are used) for example, power capacitors, motor running capacitors, etc. In other words, the user does not consider Aroclor units versus some other type - when he needs a specific type of industrial capacitor, he buys an Aroclor fixed paper capacitor. The same is true of other types of capacitors filling other specialized needs. For technical reasons, Aroclor will not compete in other capacitor markets - where other types of capacitors are specified.

In some areas of the world where currency is not available to import Aroclor, or where technology has not progressed to the use of Aroclor, petroleum oil is still used in capacitors. As money becomes available and as technology improves, these markets should use Aroclor as a replacement for oil. The reason - Aroclor permits the production of lower cost and more efficient units.

The market for fixed paper capacitors is dependent upon continued industrial expansion around the world. Power plants must be built for the generation and transmission of electric power to feed this industrial expansion. Such operations will require Aroclor filled capacitors and market projects assume this continued growth of industrial applications.

In general, this market may be divided into two areas - domestic and non-domestic. A domestic market is one in which there is a major producer of chlorinated biphenyl in that particular market. For example, Bayer in Germany, Monsanto in the USA and U.K., Kanegufuchi in Japan, etc. All other markets are considered to be non-domestic, even though there are small chlorinated biphenyl producers in Italy and Spain.

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Domestic and non-domestic markets are shown on Table I.

Thus, 27,000,000 pounds or approximately 75% of the world market for capacitor Aroclor is served by a domestic supplier. Monsanto supplied 21,000,000 pounds (US and UK) and therefore sold 78% of this "so called" domestic business. The US and UK market should grow to 27,000,000 pounds by 1970, and Monsanto will continue to supply all of this market.

Domestic markets in France, Germany and Japan will likewise grow from 6,000,000 pounds in 1964 to 7,500,000 pounds by 1970. We do not expect to participate in this business since we cannot profitably compete with these domestic producers.

Non-domestic markets will go from 8,500,000 pounds in 1964 to 15,000,000 pounds by 1970. Monsanto's share of this market should increase from 3,000,000 pounds (35%) to 8,500,000 pounds (57%).

These non-domestic markets will be described in detail in a series of area strategies - an area strategy is to be written for each important area of the world (see 1966 Plans section of this strategy). The present and future markets in each important country involved in these areas are shown in Table II.

B. Forces Acting on the Market

For Monsanto

1. Production from three plants - one in the U.K. and two in the U.S.A. Very large production facilities with manufacturing costs in the U.S.A. at least as good or better than any of the other producers.

2. Exclusive supply position in the U.S.A. - the largest market - accounting for over 50% of the world's total requirements.

3. Exclusive supply position in the U.K. - a preferred position in the commonwealth area through U.K. affiliated company.

4. World-wide associations with General Electric and Westinghouse - providing favorable influence on associated companies in foreign countries.

5. Good technical and marketing know-how - ability to give good technical service to the customer.

TABLE I

THE WORLD MARKET FOR CAPACITOR AROCLOR

TOTAL POTENTIAL AND MONSANTO SHARE 1964 AND 1970 (ESTIMATED)

METRIC TONS

DOMESTIC MARKETS

	1964*		1970	
	Total	Monsanto Share	Total	Monsanto Objective
USA	8,500	8,500	11,000	11,000
UK	930	930	1,200	1,200
France	810	0	1,000	0
Germany	1,010	0	1,300	0
Japan	1,000	0	1,200	0
Total	12,250	9,430	15,700	12,200

NON-DOMESTIC MARKETS

EFTA	690	80	1,025	555
EEC	1,270	60	1,850	0
E. Europe	310	45	700	300
Commonwealth	760	688	1,465	1,365
Rest of Americas	500	400	1,190	1,190
Rest of World	230	35	400	300
Total	3,760	1,308	6,630	3,710
Grand Total	16,010	10,738	22,330	15,910

*1965 Figures were not available at the time this report was written. Figures for 1965 should be 5-10% above 1964.

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TABLE II

NON-DOMESTIC MARKETS FOR CAPACITOR AROCLOR

BY AREA - BY COUNTRY

METRIC TONS

EFTA

	1964-65	1970
Austria	60	80
Denmark	25	45
Finland	75	100
Norway	15	50
Sweden	290	400
Switzerland	225	350
Total	690	1,025

EEC

	1964-65	1970
Italy	740	1,050
Belgium	330	500
Holland	200	300
Total	1,270	1,850

EASTERN EUROPE

	1964-65	1970
Czechoslovakia	5	20
East Germany	100	200
Hungary	15	50
Poland	100	200
Romania	15	100
Yugoslavia	75	130
Total	310	700

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Table II
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COMMONWEALTH

	1964-65	1970
Australia	150	300
India	150	300
Hong Kong	10	15
Canada	450	750
Total	760	1,365

REST OF AMERICAS

	1964-65	1970
Argentina	170	380
Brazil	210	450
Mexico	120	360
Total	500	1,190

REST OF THE WORLD

	1964-65	1970
Israel	30	50
South Africa	0	50
Spain	200	300
Total	230	400

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6. Strong position and long-term supply relations with Canada, Mexico, South America and Eastern Europe.

7. Through production in U.K. - have preferred position in EFTA.

Against Monsanto

1. Product quality not as good as that available from two major competitors (Bayer and Prodelec).

2. Strong position of competition in the EEC - no Monsanto production to serve the EEC market. Long-term relations of competition with major European customers.

3. The largest of the international markets (outside of the USA and UK) being supplied by domestic producers and therefore not available to Monsanto - Germany, France and Japan.

4. The use of other cheaper dielectrics such as chlorinated naphthalenes and petroleum oil. Where these are locally available, it is often very difficult to import the more expensive chlorinated biphenyls (for example, India).

5. Longer range - the possible development of silicon diodes as a technical replacement for Aroclor type capacitors for some applications.

6. Higher production costs at MCL - resulting in greater vulnerability of this market to the European producers. The difficulty of getting greater tariff protections in the UK.

7. Prodelec technology and possible patent position in the manufacture of biphenyl.

8. Prodelec's development of Pyralene 1500 - providing a good technical image for this company.

9. The fact that Monsanto has over 67% of the world's business - makes it difficult and dangerous to take risks to increase our share of the global market.

10. The development of capacitors utilizing plastic film instead of paper - could result in a decrease in Aroclor used in each unit.

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C. Competition

The major producers of Aroclor together with their estimated production capacities are shown in Table III. The most important of these are Bayer and Prodelec and secondarily Kanegufuchi, Caffaro, Flix and producers in East Germany and Russia. The latter group sell very little material outside of their own domestic markets.

Since Aroclor is used in many other applications and markets, only a portion of the total production (approximately 40%) goes into capacitors. A separate strategy will be required for other markets.

The breakdown of competitive activity in capacitor Aroclor in the various world markets is shown in Table IV. Outside of the USA market our major competition is Bayer and Prodelec. These two companies are described in more detail below.

Table V shows a general comparison of strengths and weaknesses of Monsanto compared to the three largest producers in Europe.

Bayer (Germany)

Bayer has been producing chlorinated biphenyl for about 35 years - as long as Monsanto USA. Their quality is excellent and their commercial and technical service is considered to be good. Their Clophen products as well as the Bayer name are highly respected throughout the world. Through a basic position, their chlorine costs are low.

In spite of this, Bayer does not appear to be very aggressive in expanding their share of the chlorinated biphenyl market. They appear to be reasonably satisfied to maintain a position of "status quo." Bayer has supplied many of the larger accounts - especially in the European area, and don't appear to be interested in taking any technical or commercial action to "upset the boat." They are relying for their growth on an expansion of business with their present large customers. They have not developed any new products and do not take the lead in seeking innovations to better serve their customers. On the other hand, they do not hesitate to take the necessary pricing action to protect their long standing business - for example, lowering prices to maintain their position in Italy.

TABLE III

ESTIMATED WORLD PRODUCTION CAPACITY*

TOTAL AROCLORS

		Million Pounds	Tons
U.S.A.	Monsanto	90	41,200
FRANCE	Prodelec	10	4,600
U.K.	M.C.L.	10	4,600
GERMANY	Bayer	10	4,600
ITALY	Caffaro	2	1,000
SPAIN	Flix	1	500
JAPAN	Kanegafuchi	7	3,500
	Total	130	60,000

*Also produced in East Germany and Russia

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TABLE IV

KNOWN WORLD MARKET BY PRODUCER - 1964

(METRIC TONS)

	M.C.L.	BAYER	PRODELEC	CAFFARO	FLIX	KANEGA-FUCHI	M.C.	TOTAL
MAJOR DOMESTIC MARKETS	930	1,010	810	0	0	1,000	8,500	12,250
E.F.T.A.	65	155	455	0	0	0	15	690
E.E.C.	60	835	310	65	0	0	0	1,270
E. EUROPE	45	205	60	0	0	0	0	310
COMMONWEALTH	129	47	35	0	0	0	549	760
REST OF AMERICAS	0	100	0	0	0	0	400	500
REST OF WORLD	35	0	30	0	165	0	0	230
TOTAL	1,264	2,352	1,700	65	165	1,000	9,464	16,010

TABLE V

ELECTRICAL AROCLOR

TABLE OF COMPETITIVE STRENGTHS

	MCL/MC	BAYER	PRODELEC	CAFFARO
R.M.POSITION				
Benzene	Buy/Make	Buy	Buy (Progil)	Buy
Chlorine	Make	Make	Make (Progil)	Make
PROD. QUALITY				
1254	Good/Fair	Good	Good	Good
1242	Fair/Fair	Good	Good	Fair
ANALYTICAL	Adequate	Adequate	Adequate	Adequate
DATE PROD. STARTED	1951/1930	1930	1938-1939	Post 1945
Years	14 35	35	27	
PRODUCT RANGE	Very large	Very large	Limited (Progil)	Limited
SALES ORGANIZATION				
Strength	Good	Good	Good	Italy only - Weak
Method	Direct/Agents	Direct/Agents	Direct/Agents	Direct
Visit Frequency		Europe more than MCL	Europe more than MCL	Italy OK
Customer Relations	Much respect	Much respect	Much respect	Bit amateur
TECHNICAL SERVICE	Good	Good	Good	Not as good as Big Three
OTHER ASSETS	EFTA (Large Comp.)	EEC (Large Comp.)	EEC (Progil)	Local
SUPPLY SITUATION	Drums OK Bulk ?	Drums OK Bulk Good	Drums OK Bulk Good	Drums OK

	MCL/MC	BAYER	PRODELEC	CAFFARO
RESEARCH EFFORT	Needs MC/MCL liaison	Not obviously energetic	Very active	Non-existent
NEW PRODUCTS	Yes	No	Very active (1500)	No
AROCLOR IMPORTANCE (±%)	Small but valuable	Small but valuable	Large	Medium
PRICE LEADERS/ CUTTERS	Stability	Stability	Leaders	Cutters
PHILOSOPHY	Common schedule	Common schedule	Common schedule	To capacity

Clophen does not appear to be an important product to Bayer, and since it is an old product, they would just like to see things remain as they are. Thus, we do not expect any aggressive marketing activity from Bayer, but would expect that they would rapidly lower prices to protect their present business. They do have a large domestic market in Germany and probably consider the rest of the EEC (outside of France) as an area where they have maximum advantage.

Prodelec (France)

Prodelec has been producing chlorinated biphenyls for about 25 years. It is a very important line of products to them and accounts for a major part of their income. For this reason, they are much more aggressive than Bayer.

Prodelec make an excellent line of products and are respected throughout the European area for technical and commercial innovations. For example, they introduced the 3-ton returnable bulk container which is now a standard with many major customers in Europe. In addition they have made a number of quality improvements - notably power factor, and aggressively market the benefits of this improved quality to all major customers.

For years Prodelec has carried out a major research program in biphenyl. They have received a number of patents in this area, some of which are of concern to Monsanto. In addition they recently introduced Pyralene 1500 - an attempted replacement for Aroclor, and even though they have not been successful in replacing Aroclor, they have made a real impression on the industry as far as demonstrating their technical capability.

Prodelec is considered to be a very aggressive marketer of Aroclor products. They not only take the necessary pricing action to protect their present business, but are the most likely company to initiate lower prices to take business from others.

II. Long Range Objectives

A. Maintain 100% of the US and UK dielectric Aroclor business - at maximum profit. Increase sales from 23 M pounds in 1965 to 28 M pounds by 1970.

B. Except for the EEC and Japan, establish a dominant position in supplying Aroclor to the rest of the world - at maximum profit.

C. Increase non-domestic sales from 8,500,000 pounds ($450,000) in 1965 to 15,000,000 pounds ($1,400,000) by 1970.

D. Establish Monsanto image through common world-wide product identification and specifications and insure that our quality and manufacturing cost is as good or better than competitive producers.

III. General Strategy

Monsanto now supplies approximately 70% of the world's requirements for dielectric Aroclor. Our major markets are the USA, the UK and Canada where we have 100% of the available business. We have a share of the markets in many other areas in the face of stiff competition - primarily from Bayer and Prodelec.

Fundamental to our attempt to get additional business around the world is the complete understanding that we do nothing to jeopardize the profitability of our domestic markets - US and UK. Every aggressive move we make to take business away from the competition must weigh the risk of losing any portion of our domestic markets. There is no indication that this will happen in the USA (as far as importing is concerned), but the UK market is presently open to competitive moves by Bayer or Prodelec. We will make every attempt to strengthen our position in the UK through a reduction in manufacturing costs.

Our basic marketing strategy for capacitor Aroclor around the world will include the following:

A. We will concentrate our efforts where we have maximum strengths - in other words lead from strengths instead of weaknesses. In selected areas we will use all available Monsanto resources including frequent and in-depth account coverage, technical assistance, customer service, supply and quality position, and price innovation where desirable.

B. We will encourage the maximum sales activity on a local basis - involving all Monsanto marketing strengths that are available. This will include local Monsanto salesmen, agents, etc. This involvement will be spelled out in area strategies.

C. We will develop area strategies for all important marketing areas. These strategies will describe what we plan to do and how we will accomplish our objectives in these selected areas.

D. We will investigate selected areas where we do not now have market information and establish a plan accordingly.

E. We will develop accurate cost and profit information from the various producing locations within Monsanto (USA and UK) and ship material from that source which yields maximum profit - always considering customer needs and market requirements.

F. We will investigate our competition in depth in an attempt to get more definite information regarding processes and estimated production cost. This information will guide our marketing program, especially our pricing strategy.

G. We will use all available Monsanto personnel in the most effective and efficient manner on a world-wide basis - regardless of their present location. Additional people will be added as required to meet agreed upon objectives.

H. We will coordinate manufacturing, research and marketing on a world-wide basis to accomplish common product identification. Product specifications, quality, product names, etc. will be common through the world.

I. Any basic plan to market Aroclor in the UK and the EEC will recognize the importance of the non-electric NCR account.

J. Constantly review the technical innovations which could adversely affect the use of Aroclor in capacitors - for example, silicon diodes, plastic films, etc.

Recognizing the fluidity of relationship between the EEC and EFTA, we will be constantly alert to the need to revise our strategy for these two areas.

In summary, we will use all Monsanto resources in an attempt to gain additional business in selected areas of the world where we have strengths over competition - carefully considering at all times the risk of any action to maintaining 100% of our domestic markets.

IV. Goals (1966-1967)

A. Maintain current business and expand market share of capacitor as follows:

1. Maintain 100% of the business in the USA.

2. Maintain 100% of the business in the U.K.

3. Maintain 100% of the business in Canada.

4. Maintain essentially 100% of the business in Mexico and South America.

5. Obtain 100% of the business in Australia.

6. Obtain 100% of the business in India.

7. Obtain 100% of the business in Israel.

8. Obtain 100% of the business in Denmark, Finland and Norway and 67% of the business in Sweden.

9. Maintain present business in the EEC with minimum marketing effort, and take opportunities for new business as they arise.

10. Locate and define the markets in East Germany.

11. Obtain 100% of the business in Poland, Romania and Czechoslovakia.

12. Investigate markets and, if desirable, establish a plan to get the business in the following areas:

Hungary, Greece, Turkey, USSR, South Africa

13. Obtain 50% of the business in Spain - avoid tariff troubles with Flix (local Spanish producer).

B. Evaluate technical and commercial aspects of silicon diodes and plastic films in replacing Aroclor in capacitors - establish appropriate plan to protect Aroclor in this application.

C. Evaluate technical and commercial potential of Pyralene 1500 becoming a competitor for Aroclor in capacitors - establish appropriate plan to protect Aroclor in this application.

D. Determine the value of G. E. Pyranol P-2 to Monsanto - establish plan of action applying conclusions to Monsanto Aroclor program.

E. Determine the technical and commercial need for quality improvement, common specifications and identification of capacitor Aroclor and establish appropriate plan for implementation.

F. Obtain better information regarding Bayer and Prodelec production costs for capacitor Aroclor.

G. Develop comparable production cost information on capacitor Aroclor from Monsanto's U.S. and U.K. plants.

H. Determine technical and economic feasibility of reducing production cost on U.K. plant Aroclor - establish appropriate plan for implementation.

I. Maximize profit on export capacitor Aroclor by shipping from lowest cost production plant.

J. Improve technical and commercial liaison between Organic-International Division, particularly European areas.

K. Improve Monsanto technology in biphenyl.

L. Complete area market strategies on all important markets of the world.

M. Coordinate and standardize as much as possible the MC and MCL testing procedures - resolve and understand any differences.

V. Plans (1966-1967)

A. Establish specific Global and Area strategies, complete with goals and plans, to attain indicated market share in selected areas.

Strategy	Responsibility	Due Date
Global Market	GRB	2nd Qtr. 1966
U. S. Area	GRB	2nd Qtr. 1966
Spain Area	JMC	2nd Qtr. 1966
EFTA Area	JMC	2nd Qtr. 1966
U.K. Area	JMC	2nd Qtr. 1966
Canada Area	EPC	3rd Qtr. 1966
Mexico Area	EPC	2nd Qtr. 1966
Brazil	EPC	2nd Qtr. 1966
Argentina Area	EPC	2nd Qtr. 1966
Australia/New Zealand Area	JMC/EPC	2nd Qtr. 1966
E. Europe Area	JMC	2nd Qtr. 1966
Israel Area	JMC	2nd Qtr. 1966
India Area	JMC/EPC	2nd Qtr. 1966
EEC Area	JMC	3rd Qtr. 1966
Greece Area	JMC	4th Qtr. 1966
Turkey Area	JMC	4th Qtr. 1966
USSR Area	JMC	4th Qtr. 1966
South Africa Area	JMC/EPC	3rd Qtr. 1966

B.

Responsibility	Action	Due Date
JMC	Investigate and summarize technical and commercial competition potential of silicon diodes in Europe.	1st Qtr. 1966

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	Responsibility	Action	Due Date
	PGB, RH Munch	Investigate and summarize technical and commercial competition potential of plastic films for capacitors.	2nd Qtr. 1966
	Organic/ International	Establish and implement plans as required to meet this competition.	2nd Qtr. 1966
C.	JMC	Investigate and summarize potential competitive threat of Pyralene 1500 in Europe.	2nd Qtr. 1966
	PGB	Investigate and summarize potential competitive threat of Pyralene 1500 in USA.	2nd Qtr. 1966
	Organic/ International	Establish and implement plans as required to meet this competition.	2nd Qtr. 1966
D.	GRB/PGB	Discuss patent and technology aspects of Pyranol P-2 with G.E.	1st Qtr. 1966
	GRB	Obtain G.E. attitude toward license.	2nd Qtr. 1966
	JMC	Summarize potential need of Pyranol P-2 in Europe.	2nd Qtr. 1966
	GRB/Legal	Establish plan and take action accordingly.	2nd Qtr. 1966
E.	Organic/ International	Develop Aroclor symposium with Mfg./Research/ Marketing to discuss world-wide product quality specifications, identification, test procedures, etc.	1st Qtr. 1966
	Organic/ International	Agree upon objectives, new specifications, plans and responsibility.	1st Qtr. 1966
	Organic/ International	Achieve Aroclor quality at all US and UK plants at least equivalent to Bayer and Prodelec.	1966-1967

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	Responsibility	Action	Due Date
F.	JMC	Obtain and summarize information on processes used by Bayer/ Prodelec.	3rd Qtr. 1966
	JMC/Purchasing	Obtain and summarize information on raw material quality, availability and cost to competition.	3rd Qtr. 1966
	CJS/DBH	Estimate Aroclor production costs by competitors.	3rd Qtr. 1966
G.	CJS/DBH	Determine comparable capacitor Aroclor production cost from U.S. and U.K. plants.	1st Qtr. 1966
	CJS/DBH	Evaluate technical and economic requirements of making U.K. Aroclor production costs equivalent to U.S.	2nd Qtr. 1966
	CJS/DBH	Recommend plan of action.	3rd Qtr. 1966
	CJS	Implement plan of action.	1967
H.	GRB/JMC/EPC	Considering customer needs and Monsanto economic factors develop customer supply plan which maximizes Monsanto profit.	2nd Qtr. 1966
I.	Organic/ International	Develop and implement communication procedure between Organic Division/ International Division St. Louis and member companies.	1st Qtr. 1966
J.	Organic/ International	Establish short and long term technical and commercial manpower requirements (especially on-the-spot field sales needs) to reach sales objectives for dielectric Aroclor	3rd Qtr. 1966

	Responsibility	Action	Due Date
	Organic/ International	Implement plan to acquire and train necessary manpower.	4th Qtr. 1966
K.	MC/MCL	Resolve and attempt to standardize MC and MCL testing procedures.	December 1967
	PGB/Colin Coleman	Investigate MCL and European test procedures during June trip to Europe.	June 1966
	PGB/CC/Munch/ Organic Analytical	Resolve and understand differences and standardize where possible.	January 1967
	MC/MCL/International	Introduce standard procedures to world-wide customers.	During 1967