

**INTERMATERIAL COMPETITION OF WORLDWIDE  
FLEXIBLE PVC & POLYOLEFINS AND ELASTOMERS  
2005-2010  
MARKETS, TECHNOLOGIES & TRENDS**

**Prospectus For  
An In-Depth Strategic Analysis  
Completed January 2006**

**What is the current status of Flexible PVC Substitution that started in 1988?  
Why didn't polyolefins and elastomers make a dent in spite of great technologies?  
Why didn't flexible PVC decline as "the other" Consultants forecasted?  
Where did the great technologies of last decade go wrong? What lessons did we learn?  
Should polyolefins try to replace fPVC? Which applications? Where? How?  
What are the basic driving factors by application?**



**How can PVC stay ahead without any significant new technical developments?  
What makes PVC so hard to get? Product simplicity? Industry Structure? Technology?  
What are the met/unmet needs? By Region; What are the growth markets?  
Why are the Asian countries leading players in Global PVC?  
How important are the Environmental issues?  
What is the role of compounders and end-users ?**



**What's next for polyolefins and elastomers?**

**What are the new product offerings? How are they different from past?  
Are the newer polyolefins and elastomers any closer now?**



**What is the reaction of the current PVC suppliers by region?  
Who is driving the Global PVC industry? Europeans? American? Asians?  
How close are the current flex PVC end users to declare "We are not in the PVC business?"  
What is the future direction of flexible PVC substitution?**

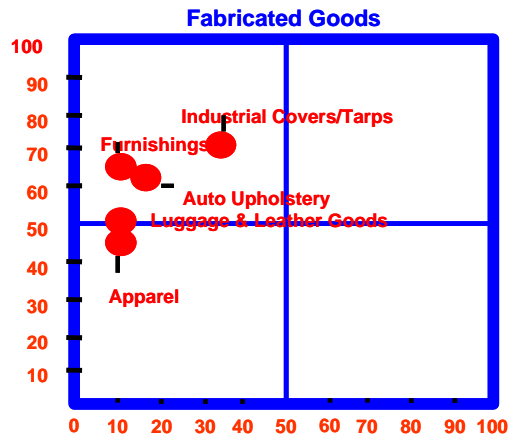
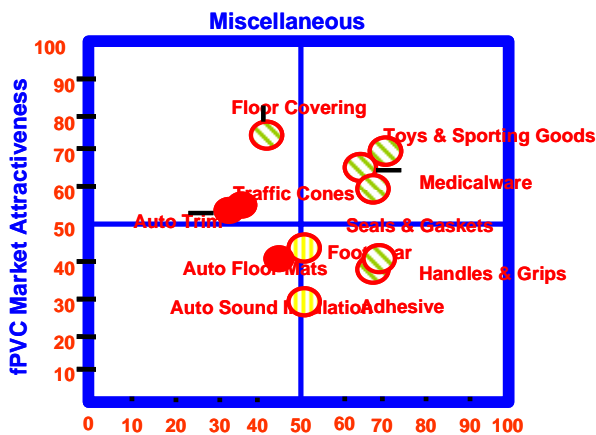
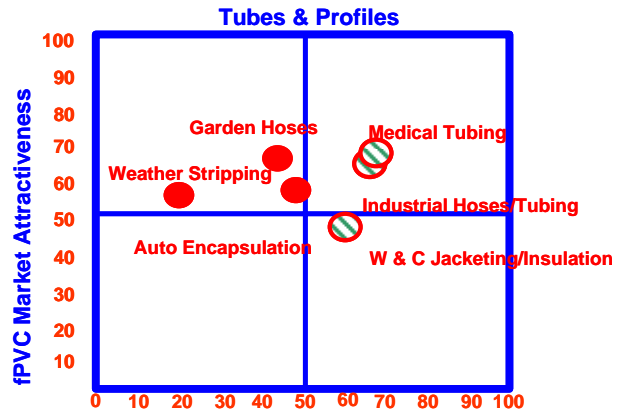
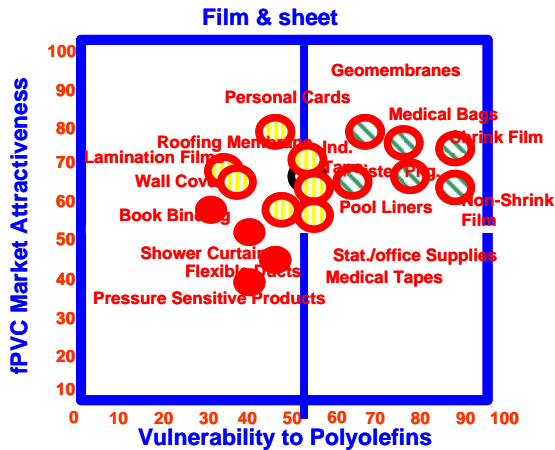


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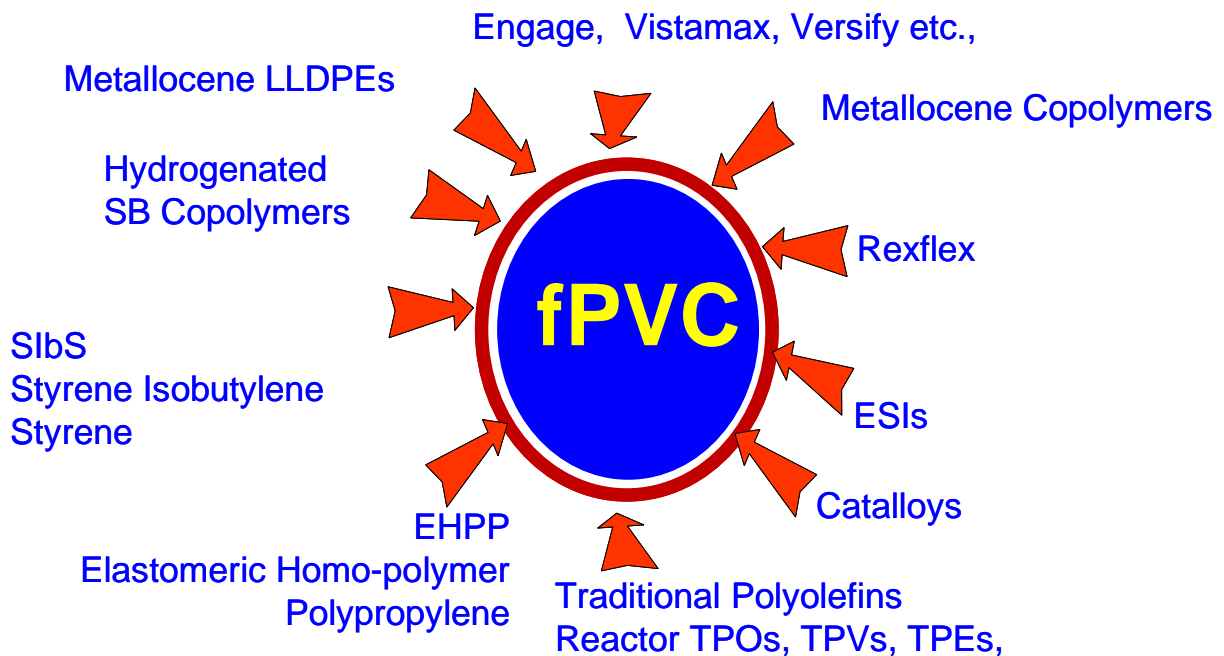
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# PVC Attractiveness/Vulnerability



# THE CONTENDERS.....



# **INTERMATERIAL COMPETITION OF WORLDWIDE FLEXIBLE PVC & POLYOLEFINS AND ELASTOMERS 2005-2010**

## **INTROODUCTION**

PVC is a key plastic material with current world production of about 20.4 million tons/year, with 4.64 million tons/year in the U.S. alone. Flexible PVC has established itself as the choice material in applications requiring less than 500 MPa flexural modulus with an array of applications in a diversity of industries: (1) packaging, (2) electrical and electronics, (3) medical and (4) consumer/institutional. Flexible PVC is the preferred material due to its versatility, and it is often purchased based on cost/performance considerations.

Flexible PVC dominates the industry representing applications that require less than 500 Mpa flexural modulus. Polyolefins and other elastomers participated in this industry for a long time but lacked the price/performance characteristics to successfully penetrate flexible PVC markets. As presented in our comprehensive analysis in 1995, flexible PVC proved to be more difficult to penetrate than anticipated mainly because of the flexible PVC industry structure. Since our last analysis, the polyolefins and elastomers industry has made tremendous strides in new product developments and is poised to compete more efficiently. An independent analysis of the current status of these intermaterial substitution issues, alternatives and the opportunities for alternative materials is in order.

## **A CONTINUING ANALYSIS**

Chemical Market Resources, Inc., with our extensive experience in (1) polyolefins, (2) flexible PVC, (3) EPDM/EPM rubber and (4) thermoplastic elastomers, is undertaking a comprehensive global strategic business/technical analysis that reports on this fast-changing intermaterial competition arena. Our in-depth examination and methodology is designed to assist companies in monitoring the rapid developments, analyzing the trends and capitalizing on the many opportunities in these changing markets and technologies. The report will assess the strategies and opportunities for developing these markets, and more importantly analyze the PVC industry in-depth to identify the right opportunities.

The report will benefit: (1) present and future polyolefin market participants, (2) PVC producers, compounders and end users, (3) plasticizer suppliers and (4) the individual end users, entrepreneurs, and organizations attempting to understand these complex issues and capture future growth in the marketplace.

## **OBJECTIVES**

- ✧ *Define the worldwide status of flexible PVC in terms of: (1) markets, 2) trends and (3) opportunities*
- ✧ *Analyze in-depth Global PVC compounding and end-use industry sectors to assess the true opportunities for substitution*



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- ✧ *Assess the global plasticizer market trends and their future impact*
- ✧ *Present a critical review of PVC influenced polyolefin and elastomer product developments and activities*
- ✧ *Assess the Global developments including the impact of Asian markets on the future of PVC, which remains quite different than the advanced nations*
- ✧ *Assist flexible PVC producers and converters with an assessment of the current and future intermaterial competition and possible product substitution strategic options*
- ✧ *Assist plasticizers, stabilizers, pigments suppliers in assessing the impact of these issues in the near future*
- ✧ *Present a critical review of the Global PVC associations, Governmental trends and others on their impact on the intermaterial substitution*

## **KEY ISSUES TO BE ADDRESSED**

- ✧ *Present in-depth analysis of key factors influencing the flexible PVC industry including, compounding, end uses and vertical integration*
- ✧ *Present the Global plasticizer market status, developments and related issues*
- ✧ *In depth analysis of over 200 specific end use markets with intense intermaterial competition opportunities*
- ✧ *Present the current and future polyolefin elastomer products positioned to successfully substitute for flexible PVC*
- ✧ *Suppliers' current and future impact of key issues on flexible PVC vulnerability in selected end use markets with multi-attribute analysis of met/ unmet needs of flexible PVC in over 200 end uses for flexible PVC*
- ✧ *Status of alternative material developments - polyolefins and elastomers*

## **TIMING & SUBSCRIPTION INFORMATION**

An order form is included as the last page of this prospectus. The report is ready for immediate delivery. Companies subscribing to the study are entitled to the purchase price of \$20,000. The report can be purchased in an electronic format with unlimited intranet use for an additional fee of \$6,000.

## **APPROACH**

The information, data and conclusions of this analysis will be developed from sources in North America, Western Europe and China, Asia and Japan and are based upon, but not limited to, the following methods:

- ✧ *Search, review and interpretation of information from government sources, trade and industry groups, public interest groups, government agencies, published articles and product promotional information*
- ✧ *Information from private experts and CMR Inc. proprietary projects (over 60 of them related to these topics in the last two years)*
- ✧ *Interviews with leading polyolefin, PVC, polyolefin and elastomer and TPE suppliers, end users and distributors .*



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## PROJECT MANAGEMENT

*As usual, this report will be a result of diligent efforts of our lead team members and a shining example of our dedication to quality and thoroughness. Brief experience summaries of the project team members follow:*

**DR. BALAJI B. SINGH**, president of Chemical Market Resources, Inc., obtained his Ph.D in Chemical Engineering from Texas A&M University and a M.B.A. in Marketing Research and Strategic Planning from Ohio State University. He has several years of experience in the oil/chemical industry in process research, process economics and marketing research. His key area of expertise is in opportunity evaluation and competitive assessment for technology value-added, specialty products in petrochemicals and functional chemicals. Balaji directed Chemical Market Resources, Inc.'s highly accurate and successful study on "Intermaterial Competition of flexible PVC vs polyolefins and elastomers 1995-2005. Chemical Market Resources Inc completed over 800 proprietary studies in various end use industry sectors for clients worldwide. He has been actively analyzing new generation polyolefins and elastomers since 1984 and has conducted proprietary studies for most of the petrochemical organizations worldwide.

**DR. FAISAL H. SYED** obtained a B.S.E. in Chemical Engineering from the University of Minnesota and a Ph.D. in Chemical Engineering from Worcester Polytechnic Institute, with emphasis on reactor design and kinetic modeling. Faisal also has an MBA from Worcester Polytechnic Institute in managing technological innovations and process development. He has conducted a variety of projects in the field of catalysts and process technology evaluation related to polyolefins production. Prior to joining CMR, Faisal work for 3M Company in St. Paul, Minnesota in the Electronics Material Applications Research Division.

**MR. JIGNESH SHAH** has a MS in Applied Chemistry and obtained his MBA from Virginia. He has worked on several proprietary studies on polyolefins and elastomers including LDPE, Polypropylene Films, High EVAs, Acid Copolymers & Ionomers, PVC, TPUs, SB Copolymers, TPEs, and Soft TPOs. Most of his work focuses on industry trend assessment, new product introduction strategies, intermaterial substitution opportunities, and cost analysis.

**MS. PRITI SAVLA** obtained her Bachelor's degree in Chemical Engineering from the University of Bombay, India. She then got her Masters in Chemical Engineering from Texas A & M University. She is currently a senior business analyst the chemical consulting group. Priti has successfully completed both multi-client and proprietary projects for several multinational companies.

**MS. KAREN COCKRILL** has a Bachelor's Degree in Economics with a Chemistry minor from the University of Illinois at Chicago. Karen currently works as a research analyst with the chemicals consulting group. She has contributed to several multi-client and proprietary studies in subjects such as lubricants, olefins, alcohols, surfactants, plasticizers, plastics processing, and other specialty chemicals.



# INTERMATERIAL COMPETITION OF WORLDWIDE FLEXIBLE PVC & POLYOLEFINS AND ELASTOMERS 2005-2010 ORDER FORM

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## ***ABOUT OUR COMPANY ...***

**CHEMICAL MARKET RESOURCES, Inc., was founded in 1990 to focus on the areas of marketing research and strategic planning. Our global clientele is concentrated within the chemical, petrochemical, plastics and related industries.**

Prior to joining CMR, Inc., our associates held responsible positions in the chemical and allied industries. Our team of professionals have strong technical backgrounds combined with hands-on business experience. Compilation of data, strategic analyses, writing and editing are entirely conducted in our state of the art facilities in-house, to assure quality control at each stage of development. Our strength is in providing our clients close interaction to maximize effectiveness. We provide in-depth analyses with actionable statements in a cost-effective and timely fashion.

### ***Our recently completed multicient studies:***

1. Intermaterial Competition of Flexible PVC, TPEs and EP(D)M Rubbers vs. new Generation Polyolefins - North America, Europe and Japan - Markets, Technologies and Trends 1995-2000
2. APP/APAO and SB Copolymers vs. New Generation Polyolefins, Markets, Technologies and Intermaterial Competition Trends 1995-2000
3. New Generation Polyolefins - A Bimonthly Global Review of Markets, Technologies & Trends – Ongoing
4. Global Polyolefins & Elastomers – Strategic News Analysis – A Biweekly Newsletter Keeping Clients Informed of the Important Events in the Industry – Ongoing
3. Chemical Market Resources, Inc., Polyolefins MT&T™ Series - An in-depth benchmark analysis of significant markets and technologies that will impact the global polyolefin industry over the next decade on: (1) PP Films, (2) High EVAs, (3) Polyolefin Foams, (4) Polyurethanes, (5) Metallocenes, (6) Elastomeric Polyolefins – TPOs, Plastomers and Elastomers, (7) PP Fibers, (8) Acid Copolymers and Ionomers, (9) EP(D)M and EPM, (10) Tie Layer Resins

#### **OTHERS**

5. U.S. Markets for Plastic Eyeglass Lenses
6. North American Unsaturated Polyesters - Markets, Technologies & Intermaterial
7. North American Antifreeze Recycling Markets: An Industry Analysis of Markets
8. Consumption Database of Ethylene Glycol and Higher Glycol Markets, U.S., Canada and Mexico
9. Consumption Database of Propylene Glycol and Higher Glycol Markets, U.S., Canada and Mexico

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## INTERMATERIAL COMPETITION OF WORLDWIDE FLEXIBLE PVC

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