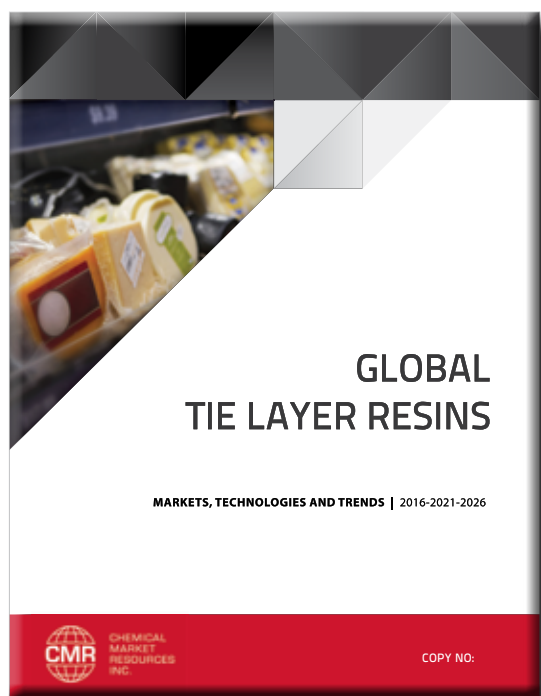


GLOBAL TIE LAYER RESINS



CHEMICAL
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MARKETS, TECHNOLOGIES AND TRENDS | 2016-2021-2026



**JULY 2017
RELEASE!**

- Strategic analysis of current market dynamics
- Overview of industry growth drivers
- Global and regional demand analysis with forecasts for the next 5 and 10 years
- Current and new developments in process technology
- Base resin impact on the market
- Current supply and outlook for the next five years
- Major changes in the competitive landscape during the past two years
- Competitive insights into markets
- Attractive markets for industry participants
- Applications most favorable for tie layer resins

WHO SHOULD BUY THIS REPORT?

- Global tie layer resin producers that are expanding capacity
- Global integrated suppliers
- Global film producers that are competing in the flexible packaging market
- Tie layer resin import and export service providers

GLOBAL TIE LAYER RESINS

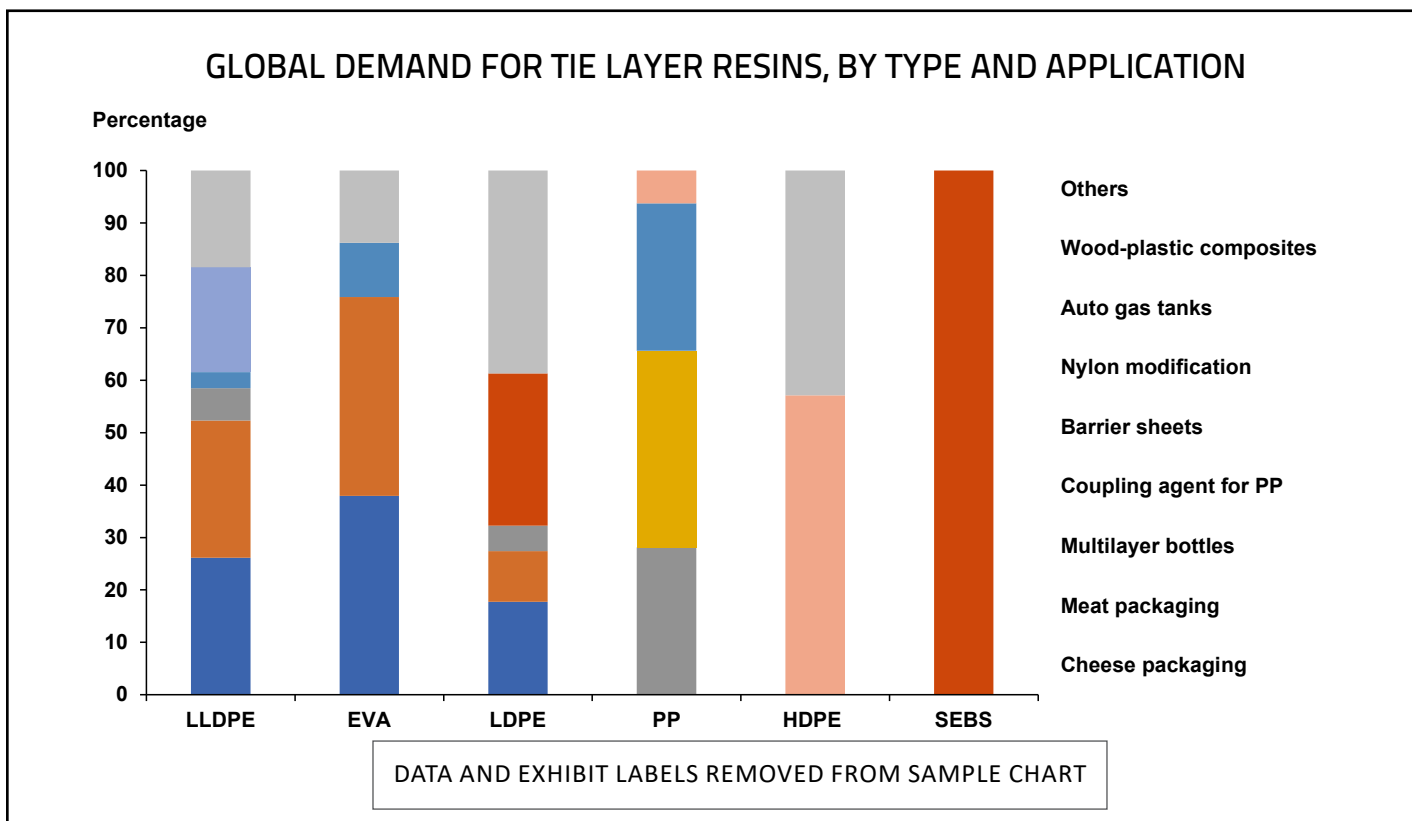
INTRODUCTION

The key components of multi-layer packaging structures include a polyolefin layer and a layer of barrier resin such as EVOH. Due to its non-polar nature, polyolefins do not adhere to the polar barrier resin layer. Tie layer resins (TLR) are used to bond the two dissimilar layers. Hence, TLR are an integral part of any multi-layer packaging structure.

Tie layer resins are functionalized polyolefins, which are produced by grafting maleic anhydride to the polyolefin substrate as a post reactor process. The most widely used polyolefin base materials for producing tie layers are – LLDPE, HDPE, LDPE, EVA and PP. The type of TLR to be used for a specific application is chosen based on several factors including adhesion characteristics and the substrate to be bonded. Advanced Ziegler-Natta and metallocene catalyzed polyolefins are currently being evaluated by major tie layer resin suppliers. TLR suppliers believe that tie layer resins manufactured by grafting anhydrides and acids onto metallocene catalyzed resins will have sharper melting points, better bond strength, puncture resistance and clarity. Increasingly, major suppliers of TLR are developing grades based on metallocene catalyzed polyolefins to address the needs

of highly demanding applications. Innovation is occurring by companies in this space to advance properties in all aspects, from the base materials through the processing to the product development arena. Product grades are advancing to achieve new retort packaging and increasing temperature ranges where hot-fill application can occur.

Traditionally tie layer resins have been used in flexible packaging applications. For instance, cheese and meat packaging account for the largest consumption of TLR. In these applications, TLR are employed to bind polyolefins with the barrier resins such as nylon or EVOH. Multi-layer packaging structures for food packaging applications help in improving the shelf life of the food product. With the development of EVOH as a barrier resin, the applications for tie layer resins have broadened to include rigid packaging as well. Typical rigid packaging applications include multi-layer bottles, containers and gas tanks in automotive applications. Besides packaging, TLR are also being used in compounding applications such as wood composites, nylon modification and coupling agents for PP.





Packaging applications account for the largest demand of tie layer resins. This will continue to be a steadily growing market over the coming years. Applications such as wood-plastic composites are witnessing robust growth offering TLR an opportunity to further expand in this market. Historically, North America and Europe have been the largest consumers of tie layer resins. These regions continue to witness steady growth, while the rise in multi-layer packaging in regions such as China and Rest of Asia will be the growth driver for the overall demand of tie layer resins.

MAJOR OBJECTIVES

- Define current status of tie layer resin market
- Detailed analysis of the manufacturing technology and current manufacturing cost analysis
- Provide an analysis of new technological developments
- Evaluate the impact of new generation polyolefins on the global tie layer resin market
- Provide detailed application analysis, intermaterial competition for tie layer resins
- Detailed regional assessment of the current supply/demand scenario
- Present market forecasts by region and application for the next 5 years and a vision of the next 10 years
- Develop detailed strategic analysis for tie layer resin markets and identify most attractive applications for entry into the market

TIMELY STRATEGIC ANALYSIS

This is a comprehensive study that will cover all major developments in the industry including changing market dynamics, technology trends, evolving industry structure and strategic alliances, current and expected competitive landscape, a renewed emphasis on the emerging regions and forecasts for the next five years.

To assist companies in developing an in-depth analysis of the current market status and monitoring new developments, Chemical Market Resources, Inc. (CMR), with its extensive experience in tie layer resin markets, presents a comprehensive business/technical strategic analysis that reports in-depth on the competitive landscape of these products/markets. The report will assess the opportunities and the strategies for developing these markets across regions.

This Study focuses on the global and regional demand dynamics, supplier productions, market shares, intermaterial competition, end-use applications, and predominant grades, tie layer resin manufacturing technologies, manufacturing cost economics, profitability, and current/future industry trends and pricing information. The study presents strategic recommendations/options for new entrants as well as an existing player. Some of the strategic options include target region, markets and products. Furthermore, future opportunities and trends are also provided for critical applications for tie layer resins.

KEY ISSUES ADDRESSED

- Outline of the global tie layer resin markets
- Current and future technologies for tie layer resin manufacturing cost
- Market/technology positioning of major tie layer resin producers
- End use requirements for polyolefin resins and unmet needs of major tie layer resin producers
- Impact of new generation polyolefins on tie layer resin markets
- Detailed manufacturing cost analysis for tie layer resins

APPROACH

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

- Search, review and interpretation of information from government sources, trade and industry groups, published articles and product promotional information
- A thorough search of relevant patent technology and process details from producers
- Information from industry experts and CMR proprietary projects related to tie layer resins
- Interviews with leading suppliers of polyolefin and tie layer resins, film converters, major end users in each market segment
- Manufacturing cost economics and pricing structures are based on our extensive cost databases and interviews

GLOBAL TIE LAYER RESINS

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APPENDIX 1: GLOSSARY AND ABBREVIATIONS

GLOBAL TIE LAYER RESINS

ABOUT CMR

Chemical Market Resources, Inc (CMR) was established in 1990 to undertake business research and strategic planning for a global clientele base concentrated in the chemical, petrochemical, plastics and allied industries.

CMR is a full service consulting and market research firm with an emphasis on market oriented specialty polyolefins, feedstocks, derivatives and thermo-plastics.

The company employs highly qualified chemical engineers/chemists with advanced degrees and extensive experience in analysing all aspects of chemicals markets and technologies.

With a strong technical background combined with business research experience, CMR is in a unique position to address the analysis of the existing and future business/technology opportunities.

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