

# **ALTERNATIVES TO PAINTING PLASTIC AUTOMOTIVE INTERIOR COMPONENTS**

***A Discussion of the North American  
Market and a Forecast for 2000-2005***

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## Summary

North American demand for traditional coatings for plastic automotive interior components has historically shown strong growth through the 1980's and early 1990's, driven by the strong growth rate of plastic resins displacing metal. The overall demand for plastics coatings remained high during the late 1990's due to unprecedented new car builds. However, when analyzed on a "per vehicle" basis, the growth of plastic coatings shows slower growth. The author has analyzed the North American automotive market and has concluded that the coatings growth for plastics will show marked slowing through 2005 with average demand per vehicle growing at 1.5-1.9%/yr. The primary factors causing this slowing of growth are:

- Slowing of the growth of the plastic substrate
- Improving plastic resin technologies that preclude the need for coatings
- Other alternative decorating technologies with lower costs and that address the negative environmental issues associated with paint

This article provides an in-depth analysis of the impact of emerging alternative technologies noted in the last two factors. The effect of this surface area "share" loss to alternative decorating technologies combined with the slowing of the substrate growth will culminate in a slowing of demand for traditional coatings. Furthermore, the recent slowing of car builds will have an additional effect, possibly causing the total demand for traditional coatings to have stagnant or negative growth.

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## Introduction/Methodology

ChemQuest Group, Inc., is a management consulting firm specializing in the Coatings, Adhesives, Sealants, and Automotive Industries with offices throughout the United States and Europe. ChemQuest has analyzed these industries continuously since 1975, mainly through proprietary (single client) studies as well as multi-client industry studies. This paper was developed from on-going research into the use, trends and dynamics of the automotive coatings and plastics industries.

The methodology for this paper was to research the impact of emerging alternative technologies on interior coatings demand. This research included analysis of each alternative technology and its:

- ❑ supplier-stated features/benefits
- ❑ underlying fundamental costs
- ❑ environmental impact
- ❑ product performance
- ❑ comparison of technology to current and future customer needs

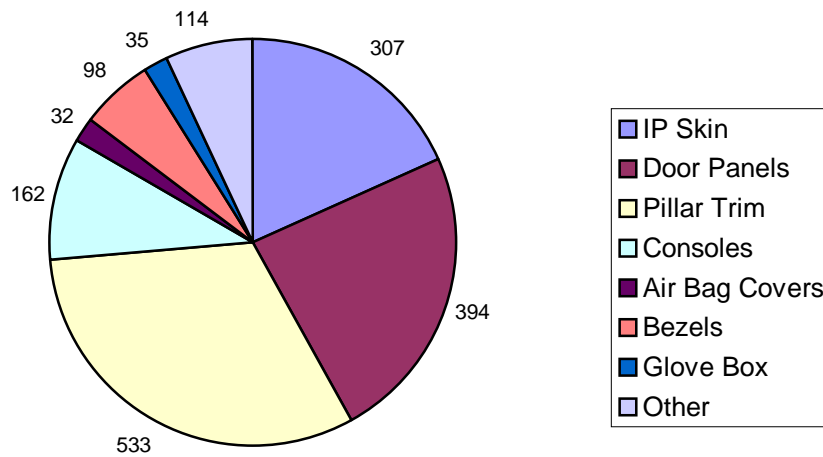
Forecasts were based on the average surface area per vehicle (SAPV). Market size (available surface area) was estimated for 2000 and projected to 2005 based on a constant car build of 17MM(million) units/yr. The scope of this study was North America.



## Alternatives for Decorating Interior Plastics – Significant Growth of Molded-In Color

ChemQuest estimates the 2000 North American market size for interior trim at 1,675MM ft<sup>2</sup>/yr (MM is one million). This estimate assumes North American car builds of 17MM units/yr. The market is estimated to be growing at 1.1%/yr, which will take it to 1,760MM ft<sup>2</sup>/yr in 2005.

The graph below is a breakdown of the market by part type.



**Figure 1 2000 North American Market Size for Interior Trim (MM ft<sup>2</sup>/yr)**

The market growth will come mostly from increasing surface area due to styling changes and from the trend toward a product mix of larger vehicles. Growth from displacement of metal will be negligible, as the penetration of plastics at the expense of metal is essentially complete in this category.



The primary determinant of interior coatings growth will not be the growth of plastic substrate surface area, but rather the current trends that favor use of alternative technologies such as molded-in color. Those trends are:

- Increased usage of TPO
- More molded-in color
- Component integration and fewer materials of construction

There is interdependency among these trends ultimately driven by the design engineers' need for lower component cost, more efficient assembly and to a lesser extent, enhanced recyclability.

### ***Increased usage of TPO***

For cost reduction and safety, many hard trim applications are moving toward TPO as the material of choice. In addition to penetrating the hard trim components (at the expense of ABS), TPO is moving into instrument panel (IP) skins replacing vinyl, and into air bag doors/covers replacing RIM and thermoplastic polyester. TPO has a low surface energy and is therefore difficult to paint causing molders to consider alternatives to painting. In many cases TPO requires surface treatment or an adhesion promoter to prepare the surface to accept paint.

Furthermore, as TPO becomes the resin of choice across all interior trim, there will be less issues of color mismatch caused by use of dissimilar molded-in color resins – another indirect benefit for molded-in color allowing it to be pulled along with the growth of TPO.

### ***Improving performance of resins***

Performance issues, specifically fade resistance and mar resistance as well as color and gloss consistency, have hampered the use of molded-in color. However, it appears that the use of molded-in color is poised to pick up pace as resin suppliers work to overcome these through resin modifications. Concerns regarding fade resistance and chemical resistance have decreased as TPO and polypropylene have increased in usage. The prevalence of TPO has resolved many color fade and match issues by converging the materials choice to one generic material that eliminates the historical problem of interior mismatch caused by differential color fade

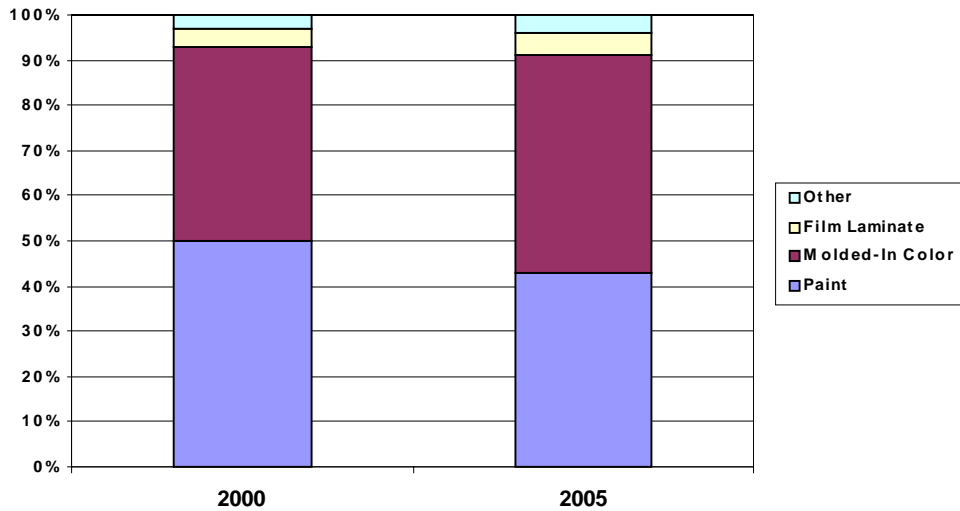


among many materials. Gloss and “feel” are still open issues for molded-in color, and solutions could come in the form of a clear coating or film laminate. By the 2005 model year, molded-in color should have nearly equal market share with paint for interior trim.

***Fewer components and materials of construction***

Recyclability concerns are driving further consolidation of components and materials. This will accelerate the decline of coatings usage due to difficulties in separating the coating from the plastic. The trend toward fewer components and modular construction will drive fewer material choices further easing color match concerns as well as decreasing costs and improving recyclability.

The net effect of these trends will be a sharp decline of 3.3%/yr in the usage of interior coatings and a sharp increase in the use of molded-in color. As the OEMs’ marketing efforts continue to drive design differentiation, there will be more use of interior appearance as a point of differentiation. This should cause a slight increase in film laminate use, both for special appearance effects (woodgrain, graphics) as well as special esthetics such as “soft-touch” grow. Below is a forecast of the market share of each technology.



**Figure 2 2000 North American Decorating Technology Market Share Interior Trim**



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