

Robert Eller Associates, Inc.

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TECHNICAL / ECONOMIC / MARKET ANALYSIS & MANAGEMENT DECISIONS**

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**Press Release
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**POLYOLEFIN FOAMS . . . CHALLENGING POLYURETHANE IN AUTO INTERIORS
AND INTRODUCING NEW TEXTILE/FOAM COMBINATIONS**

Akron, OH – Polyurethane foams have long dominated the 850,000 tonne auto interior foams market in North America and Europe. The recent emergence of several forms of polyolefin (PO) foam is posing a challenge to several PU foam applications (see graphic for typical applications).

Among the recent technical developments that will stimulate the entry of PO foams into the auto interior market in competition with PU foams are:

- The application of chemically crosslinked PO sheet foams to door trim applications (to compete with poured PU foams, PU sheet foam, and radiation crosslinked PO foams)
- The entry of new manufacturers of radiation crosslinked PO sheet foams
- The development of techniques for laminating PO sheet foam to textiles (in competition with flame bonding of PU foam sheet to textile body cloth)
- The entry of non-crosslinked foams for relatively low performance applications (e.g., trunkliners)
- The entry of steam chest molded bead foam (primarily expanded PP [EPP]) molded in combination with textiles for emerging absorbing applications like instrument panel components, door trim, and (recently--at Audi) rear seating
- The introduction of Dow Automotive's STRANDFOAM® EA

In automotive flooring applications, PU foams are competing with new lightweight fiber batting for the acoustics portion of the floor module since the PO foams have limited acoustic properties.

The major current battleground for sheet foams is in the door trim panel for applications such as medallions, armrests, and water shields. The evolution of improved textile/PO foam lamination methods is facilitating the penetration of PO foams into these applications at two European OEMs.

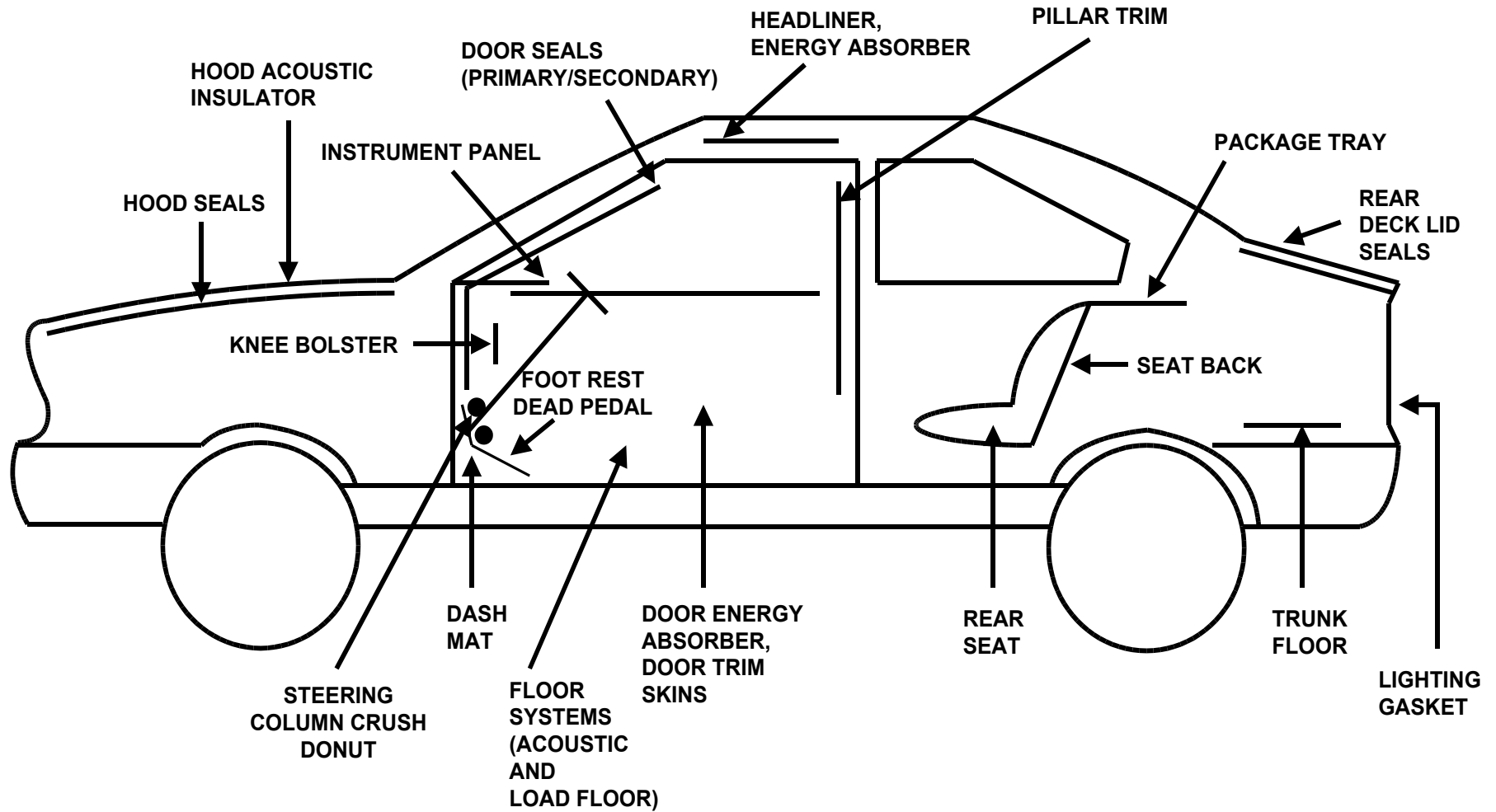
Bob Eller, President of Robert Eller Associates, Inc. (REA), the Akron, Ohio-based consulting firm, noted that “the driving forces for substitution of PO sheet foams is driven by cost, recyclability concerns, and the elimination of gassing which occurs in the PU foam flame lamination to textiles. If the evolving lamination techniques are successful, PP-based textiles will enter the market in PP textile/PO foam sheet laminates to challenge the incumbent polyester textile/PU foam laminates currently used in many body cloth applications.”

Eller continued, "Energy absorber applications are evolving into a battle between PU foams, EPP steam chest molded foams, and Dow's STRANDFOAM® EA. Current energy absorber applications are mostly an add-on to headliner, door trim, and pillar trim applications to meet head impact requirements. While the energy absorber blocks are an interesting intermaterials competition, the real breakthrough will be when the blocks are integrated into the interior module and become the entire substrate. The heat resistance and acoustic properties are limiting factors for some of these applications (for example, complete headliner substrates)."

These are among the trends identified and quantified for NAFTA and Europe in the newly released multi-client study, **Automotive Interior Soft Trim: Skins, Foams, Coated Fabrics, Textiles, and Acoustic Barriers**, offered by Robert Eller Associates, Inc. (Akron, OH). These and other developments will also be discussed at the Plastics In Automotive Interiors Conference organized by REA and EPN Conferences on October 8/9 in Frankfurt (online information at www.autointeriorevent.com). A prospectus and table of contents for the REA soft trim multiclient study can be viewed on the REA home page, <http://www.robertellerassoc.com>. REA can be reached via email at bobeller@prodigy.net.

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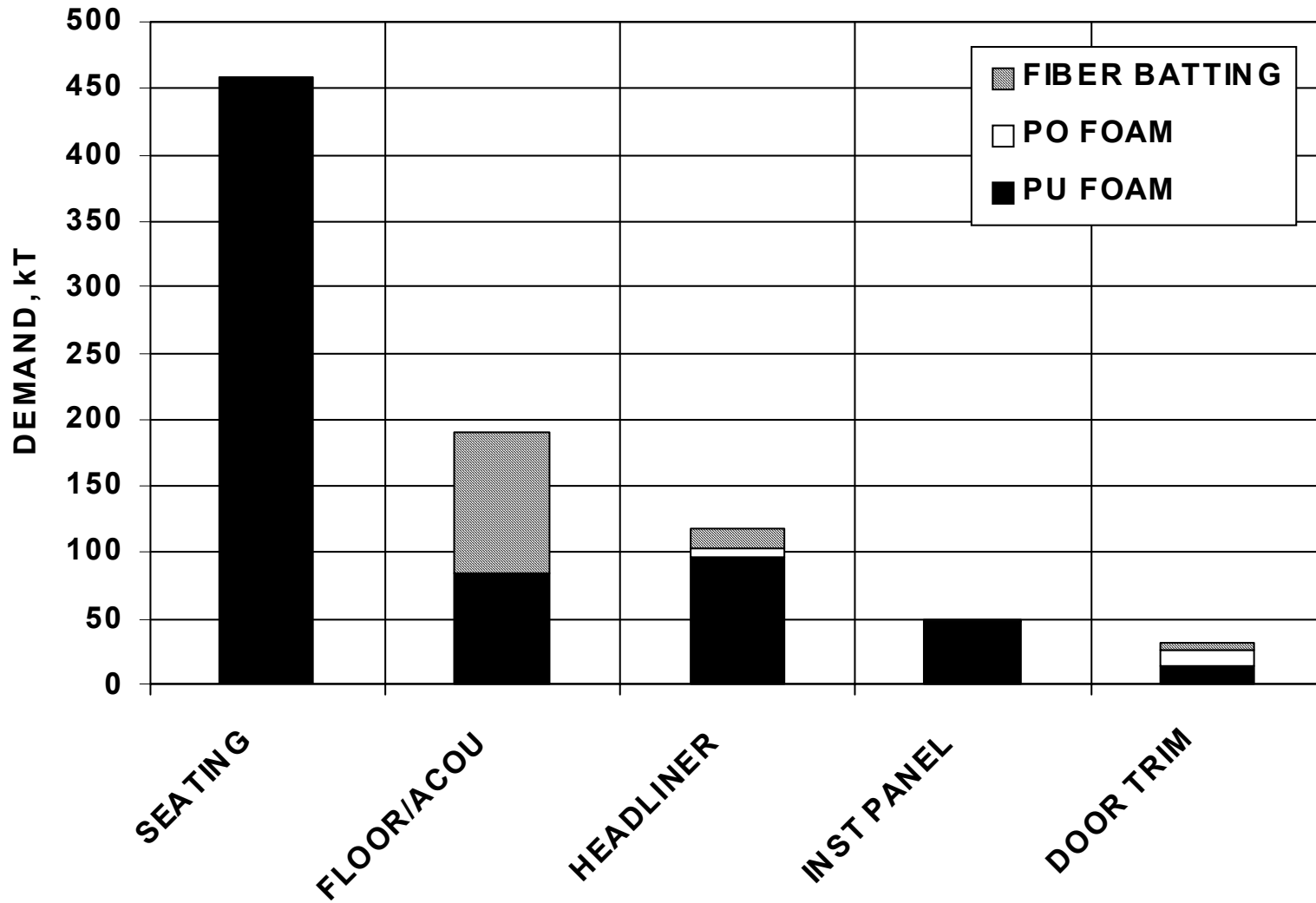
AUTOMOTIVE FOAMS TARGETS



SOURCE: ROBERT ELLER ASSOCIATES, INC. MULTICLIENT STUDY, 2003

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SOFT TRIM FOAM MARKET SHARES (NAFTA/EUROPE -- 2002)



SOURCE: ROBERT ELLER ASSOCIATES INC., 2003