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# **Current Technologies in Flexible Packaging**

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**Michael L. Troedel, editor**



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**STP 912**

# CURRENT TECHNOLOGIES IN FLEXIBLE PACKAGING

A symposium  
sponsored by  
ASTM Committee F-2  
on Flexible Barrier Materials  
and the Flexible Packaging Association  
St. Charles, IL, 1 Nov. 1984

ASTM SPECIAL TECHNICAL PUBLICATION 912  
Michael L. Troedel, General Mills, Inc.  
editor

ASTM Publication Code Number (PCN)  
04-912000-11



1916 Race Street, Philadelphia, PA 19103

## **Library of Congress Cataloging-in-Publication Data**

Current technologies in flexible packaging.

(ASTM special technical publication; 912)

"ASTM publication code number (PCN) 04-912000-11"

Includes bibliographies and indexes.

1. Plastics in packaging—Congresses. I. Troedel, Michael L.  
II. ASTM Committee F-2 on Flexible Barrier Materials. III. Flexible  
Packaging Association (Washington, D.C.). IV. Series.  
TS198.3.P5C87 1986 688.8 86-17490  
ISBN 0-8031-0478-2

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Library of Congress Catalog Card Number: 86-17490

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# Foreword

The symposium on Current Technologies in Flexible Packaging was held in St. Charles, Illinois, on 1 Nov. 1984. The event was jointly sponsored by ASTM, through its Committee F-2 on Flexible Barrier Materials, and the Flexible Packaging Association. Michael L. Troedel, General Mills, Inc., presided as chairman of the symposium and also served as editor of this publication.

## **Related ASTM Publications**

**Child-Resistant Packaging, STP 609 (1976), 04-609000-11**

**Adhesion Measurement of Thin Films, Thick Films, and Bulk Coatings, STP 640 (1978), 04-640000-25**

**Wear Tests for Plastics: Selection and Use, STP 701 (1980), 04-701000-19**

**Physical Testing of Plastics, STP 736 (1981), 04-736000-19**

## A Note of Appreciation to Reviewers

The quality of the papers that appear in this publication reflects not only the obvious efforts of the authors but also the unheralded, though essential, work of the reviewers. On behalf of ASTM we acknowledge with appreciation their dedication to high professional standards and their sacrifice of time and effort.

*ASTM Committee on Publications*

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# Overview

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The symposium on Current Technologies in Flexible Packaging was sponsored by ASTM Committee F-2 on Flexible Barrier Materials and the Flexible Packaging Association. The nine papers in this volume, which were presented at that symposium, review emerging technologies in the flexible packaging industry. The topics include aseptic packaging, test method development, emerging markets for metallized films, new high-barrier film applications, and coextrusion technology.

The paper by *Skodis* discusses the advantages of metallized films, which provide a wide range of options for innovation, consumer appeal, service, and cost savings for the converter and packaging material user.

*Samuels* stresses that Saran polymers, polyvinylidene chloride (PVDC)/vinyl chloride copolymers, are known for excellent barrier characteristics against both water vapor and oxygen permeation. His paper covers the development of a new high-barrier PVDC copolymer film for lamination use.

*Rohn* evaluates the benefits of polycarbonate resin as a structural layer in high-barrier coextrusions for flexible packaging. High-temperature performance requirements are examined for hot-fill, retort, autoclave, and ovenable packaging; coextrudable barrier resins and tie layer resins are evaluated; and the benefits of low- and high-moisture barriers are compared in composites.

*Stefanovic and Dickerson* discuss the removal of hydrogen peroxide from flat packaging material used in aseptic packaging of food. The critical variables are the effective temperature of the drying air, the temperature of the sterilant, and the residence time in the drying zone.

The paper by *Wang and Toledo* addresses inactivation of microorganisms on polyethylene exposed to hydrogen peroxide in air. They state that air saturated with hydrogen peroxide vapor in equilibrium with 35% aqueous hydrogen peroxide solution possesses sporicidal properties suitable for use as a sterilant in aseptic packaging systems.

*Baner et al* evaluate two test methods developed which provide quantitative and reliable values for the rate of diffusion of organic vapors through polymer membranes.

*Richmond and Harte* contend that high-performance liquid chromatography (HPLC) is a powerful analytical tool which has application to flexible

packaging materials. They state that the technique can be used for qualitative and quantitative evaluation of material components and processing variations, and for physical characterization.

*Dunn's* paper presents the fundamentals of differential scanning calorimetry (DSC), with particular emphasis on polymer systems used in flexible packaging. The use of DSC techniques to distinguish film properties from the properties of base polymers is also described.

*Caimi and Fries* describe flexible packaging converters using EPA-complying adhesives in aqueous and 100% solid forms. Aqueous grades are applied with the same direct gravure coating stations used for solvent-borne systems; 100% solid types are applied by offset gravure.

This volume covers a wide range of topics in the area of flexible packaging. It was not intended to be totally comprehensive. It does, however, address major emerging technologies in flexible packaging, as presented by some of the most authoritative investigators in this field.

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