SEMINARS FOR ENGINEERS

Lamination of Flexible Materials for Packaging

About the Seminar:

Lamination of Flexible Materials for Packaging is designed to give engineers and others an understanding of lamination processes and the properties of the resultant laminates Utilized in flexible packaging. Monolayer flexible materials often fall short in delivering the needed properties. Lamination is an important technique utilized to combine materials to assure that the finished packaging materials demonstrate properties needed for packaged products. This two day seminar covers various lamination technologies, process variables, testing procedures, upstream and downstream processes and troubleshooting techniques.

Who Should Attend:

Personnel involved in the R&D, manufacture, testing, product development, process support, design, use and sales of multi-layer packaging who wish to jumpstart or round out their knowledge of lamination. Flexible packaging laminations are used in the food, pharmaceutical, medical device, consumer goods, and industrial goods industries. The seminar is intended to be an introduction into laminating technology for engineers and others who support, troubleshoot, specify buy and sell flexible packaging laminations.

Benefits of Attending

- Learn how physics and chemistry apply to achieving a good lamination
- Learn the layout of lamination equipment
- Learn techniques to troubleshoot lamination problems
- Learn the differences between lamination processes
- Learn about the what's needed upstream and downstream for successful laminates
- View the laminating process through technical data, graphs and formulas

Concepts Covered

- Wetting and its impact on adhesion
- Extrusion vs. adhesive lamination
- Rationale for lamination
- Bond testing
- Bond failure mechanisms
- Alternatives to lamination

Lamination of Flexible Materials for Packaging

Course Syllabus

DAY 1

Introduction

Fundamental definitions

Why do we laminate?

Packages that are laminated

Multilayer tactics

- Adhesive lamination
- Extrusion lamination
- Coating

Coextrusion

Materials

Webs that are laminated

Plastics and other polymers

Metals

- Papers
- Multilayer materials

Adhesives

Other materials that impact laminations

- Inks
- Additives

Primers

Layer functionality

- Strength/stiffness
- Print carrier
- Primer

Adhesive

Barrier

- Sealant

Science of lamination

Surface chemistry

Surface treatment

- Flame
- Corona / “plasma”
- Priming
- Adhesion
- Adhesive chemistry

Heat transfer

DAY 2

Unit operations in laminating

- Winding and web transport
- Treatment

Roll Coating

- Extrusion
- Other coating techniques
- Drying

Laminating

Curing

Heating

Cooling

Specific lamination techniques in more detail

- Solvent-based adhesive lamination
- Water-based adhesive lamination

Solvent-free adhesive lamination

Extrusion lamination

Laminating machine layouts

- Simplex (Two ply)
- Duplex / Tandem (Three ply)
- Extrusion/Adhesive combinations
- Press/laminators

Testing of laminations

- Green tack
- Curing and cured bonds
- Peelable bonds vs. destruct bonds
- Coefficient of friction
- Heat resistance
- Sealability

Tensile behavior

Barrier testing and calculations

Performance testing

Troubleshooting

- General tactics for troubleshooting
- Gallery of lamination defects
- What can go wrong:

Delamination

- Lamination spots/bubbles
- Heat resistance
- Chemical resistance

Discoloration

- Lack of performance
- Troubleshooting case studies