



**Adhesive Bonding Technology:
Materials and Applications
ADBT-8828**

This course offers a sound and comprehensive assessment of the latest developments in adhesive bonding technology, discussing manufacturing, available materials, processes, and troubleshooting. The course is focused on general industrial, automotive, aerospace, and electronics applications. Case histories will be discussed, along with current approaches to solving problems in selection and processes, testing, and efficiency improvements. This course will provide the knowledge and skills necessary for successful adhesive bonding.

WHO SHOULD ATTEND?

All manufacturing personnel working with adhesives; process, design and production engineers and technicians; chemists; personnel in inspection, quality control, and technical sales; and those who need a working knowledge of adhesive bonding technology. If you are contemplating adhesive application, need to comply with certain specifications and regulations, or want to resolve problems, this course will provide valuable insight.

BENEFITS OF ATTENDING:

- Learn how to select environmentally compliant adhesives, primers, and sealants, and become familiar with their properties and application methods.
- Develop an overall understanding of adhesion phenomena and engineering requirements.
- Become familiar with surface properties and learn effective methods of surface treatment.
- Gain a valuable understanding of joint design and bonding techniques.
- Learn how to save costs by judicious choice of materials and efficient application methods.
- Reinforce your mastery of troubleshooting and problem solving.
- Learn how to pinpoint causes of failure, and how to prevent them.

Course Outline

- **Fundamentals of Adhesive Bonding**
 - Advantages and limitations
 - Adhesion phenomena
 - Factors affecting adhesion
 - Requirements for adhesion
 - Methods of promoting and maintaining adhesion
- **Surface Engineering**
 - Surface nature and characteristics
 - Surface cleaning and preparation of metals, plastics, and composites
 - Surface modification: physical, mechanical, and chemical
 - Specific methods of modifying plastic/composite surfaces
 - Evaluation of surface preparation

- **Manufacturing with Adhesives**
 - How to convert to adhesive bonding
 - Joint design and load analysis
 - Selecting adhesives for specific joints
 - Adhesive types, cure (drying) methods and mechanism
 - Special requirements, properties, and selection
 - Acrylics
 - Epoxy
 - Phenolics
 - Polyurethanes
 - Polyamides/polyimide
 - Silicone and silicone modified adhesives
 - Conductive adhesives
 - Sealants
 - Anaerobics
 - Cyanoacrylates
 - Hot melts
 - Rubber-based adhesives
 - Pressure sensitive adhesives
 - Radiation cure adhesives

- **Adhesive Bonding of Composites, Plastics and Rubbers**
 - Special considerations for thermoplastic materials
 - Surface preparation specific to plastics and composites
 - Parameters affecting the joint strength in plastics
 - Adhesive selection, and special processes and application methods

- **Water-based Adhesives and Primers**
 - Understanding water-based adhesives
 - Special processing requirements
 - Selecting water-based adhesives

- **Evaluation of Bonded Joints**
 - Methods of non-destructive testing
 - Destructive bond strength evaluation
 - Advanced test methods

- **Durability of Adhesively Bonded Joints**
 - Why does a joint fail?
 - Mechanisms and modes of failure
 - Fatigue and fracture in bonded joints
 - Methods of enhancing durability
 - Screening structural adhesives
 - Testing adhesively bonded joints

- **Advanced and Future Technologies**
 - Adhesives for severe environments
 - High performance adhesives

- **Case Histories in Adhesive Bonding**