

CARL HANSER VERLAG

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Plastics and Composites Welding Handbook

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Preface

Welding methods are an important class or group of joining technologies for manufacturing of plastic and polymeric composite products. As the use of plastics and composites increases in a variety of applications so do the needs for rapid, reliable, and high-quality welding methods. Also, as polymers and polymeric composites are being used in more structurally demanding applications, the structural requirements for the welds increase as well. Since welding is usually done near the end of the manufacturing cycle, there is significant value added to the products before these final joining operations. Therefore, it is important to carefully consider and select the appropriate welding technique for the application. This requires a fundamental understanding of the physical and phenomenological aspects of the welding steps that are common to all welding processes as well as understanding the fundamentals of each welding method. In addition, one must consider process selection strategies and methods for evaluation of the properties of the welds. With this information, it is then possible to consider and select suitable welding methods during product design and manufacturing stages.

This handbook is intended for a wide audience including: welders, welding equipment operators, design engineers, manufacturing engineers, chemical engineers, material scientists, and research and development personnel. Each chapter was developed by experts in the field with a wide breadth of information dealing with all the welding aspects including materials, process phenomenology, equipment, and joint design. The authors also included many application examples to assist engineers in considering the materials and geometries that were successfully used for a specific process. While not all encompassing, the handbook provides most of the basic information along with references that can be used to gather additional information or details.

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