

Armour: Materials, Theory, and Design

By Paul J. Hazell

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Armour: Materials, Theory, and Design By Paul J. Hazell

Highlights Recent Advances in Materials/Armour Technology

As long as conflict exists in the world, protection technologies will always be in demand. **Armour: Materials, Theory, and Design** describes the existing and emerging protection technologies that are currently driving the latest advances in armour systems. This book explains the theory, applications, and material science aspects of modern armour design as they are used in relation to vehicles, ships, personnel, and buildings, and explores the science and technology used to provide protection against blasts and ballistic attacks. It covers materials technologies used in protection; addresses the system effects of adding blast-wave shaping to vehicles, as well as the effect on the human body; and outlines ballistic testing techniques.

Takes a Look at How Armour Works

The book discusses ceramics for armour applications; transparent armour; and metals for armour applications (including aluminium alloys, magnesium alloys, titanium alloys and steels); as well as composite armour systems; explosive reactive armour systems with reference to defensive aid suites for vehicles; and wound ballistics. In addition, the author lists more than 100 references for advanced study and further reading.

Armour: Materials, Theory, and Design introduces a variety of armour technologies, outlines modern threats and dangers applicable to protection technology, and aids readers in implementing protective structures that can be used in battle, conflict, military zones, and other related environments.

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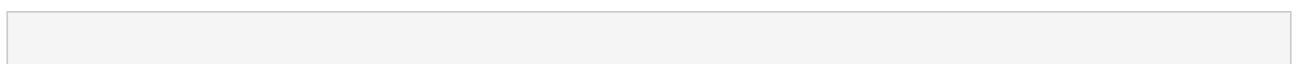
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Editorial Review

Review

"This book explains the theory, applications, and material science aspects of modern armour design... examines different areas of the advanced threat and armour protection in the light of new development and gives a lot of examples of the increases in performance possible to expect."

?*Advances in Military Technology*, 2015

"... a valuable resource ... I predict it will be on the shelves of all researchers in this field in no time. It is full of relevant examples, material information, and illustrations that provide the reader with a complete picture of penetration mechanics in a wide variety of materials. ... well-researched and combines some of the latest approaches with classical theories resulting in a full picture of armor penetration. I really like Professor Hazell's writing style and I am certain my students will enjoy the book as well.

?Don Carlucci, Co-Author, Ballistics, Theory and Design of Guns and Ammunition

"...I found the book extremely informative. While the actual design of armor and the defeat of it has the basis in much deeper mathematics and studies than covered in the book, it provides the full overview and references needed for a full perspective. This book will be highly useful to materials scientists and engineers beyond those explicitly interested in armor and munitions, as the mathematics and mechanics of materials presented in the book are of immediate use to anyone researching impact-absorbing materials. Relevant fields range from medical implants to civil and automotive engineering. The classical knowledge of armor and impact could also find relevance in fields of ion bombardment and nanomanufacturing techniques. I can also see this as a good short-course textbook for undergraduate and even graduate mechanics of materials classes, as it clearly illustrates practical examples of how the mechanics, composition, and formulation of materials affect their ability to damage or withstand damage from another material. Additionally, the book contains useful charts and tables that summarize the mechanical attributes (e.g., fracture toughness, Young's modulus)."

?*MRS Bulletin*, July 2016

About the Author

Paul J. Hazell is a professor of impact dynamics at UNSW Australia. His main research interests are shock loading, penetration mechanics, and lightweight armour optimization. He also teaches courses related to terminal ballistics and armour design at the Australian Defence Force Academy in Canberra. Prior to coming to Australia, he worked for Cranfield University at the Defence Academy of the United Kingdom at Shrivenham. Hazell graduated from the University of Leeds in 1992 with a BEng (Hons) degree in mechanical engineering, and pursued his doctoral studies at the Shrivenham campus of Cranfield University (at the Royal Military College of Science).

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