



## Peterson's Stress Concentration Factors

By Walter D. Pilkey, Deborah F. Pilkey

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**Peterson's Stress Concentration Factors** By Walter D. Pilkey, Deborah F. Pilkey

*Peterson's Stress Concentration Factors* establishes and maintains a system of data classification for all of the applications of stress and strain analysis and expedites their synthesis into CAD applications. Substantially revised and completely updated, this book presents stress concentration factors both graphically and with formulas. It also employs computer-generated art in its portrayal of the various relationships between the stress factors affecting machines or structures. These charts provide a visual representation of the machine or structure under consideration as well as graphs of the various stress concentration factors at work. They can be easily accessed via an illustrated table of contents that permits identification based on the geometry and loading of the location of a factor.

For the new third edition, new material will be added covering finite element analyses of stress concentrations, as well as effective computational design. The book explains how to optimize shape to circumvent stress concentration problems and how to achieve a well-balanced design of structures and machines that will result in reduced costs, lighter products, and improved performance.

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## **Editorial Review**

### **From the Publisher**

A complete revision of the definitive work on the subject of stress concentration. This new edition updates all of the graphics with computer-generated art which incorporates both a visual representation of the product/structure under consideration along with the graph of the stress concentration factors. Contains extensive material on how to perform computer analyses for stress concentrations and how to design to reduce them. A "quick-finder" feature has been provided for locating frequently used charts.

### **From the Back Cover**

#### **The definitive guide to stress concentration, newly revised and updated**

Stress concentration factors are used in the design of mechanical or engineering structures and machinery and have a tremendous impact on design of virtually every product or structure subject to environmental or use-related stress—from nuclear equipment, deep-sea vehicles, and aircraft to space vehicles, underground tunnels, and turbines. But the sheer volume of stress concentration data is now so large that analysts and designers may have difficulty integrating this information efficiently into design applications.

Now in its third edition, Peterson's Stress Concentration Factors establishes and maintains a system of data classification for all of the applications of stress and strain analysis and expedites their synthesis into CAD applications. This new edition of the book has been substantially revised and completely updated and presents stress concentration factors both graphically and with formulas. Structures and shapes of interest can be easily accessed via an illustrated table of contents that permits identification based on the geometry and loading of the location of a factor.

This updated Third Edition features:

- Completely updated and revised coverage of the most recent stress concentration factors, including geometric discontinuities in tubes and countersunk holes in plates
- The how-to's of optimizing a shape to circumvent stress concentration problems and to achieve a well-balanced design of structures and machines that will result in reduced costs, lighter products, and improved performance
- New guidelines for the likely stress decay away from the point of the stress concentration for various holes and notches
- New methods for analyzing and calculating the stress concentration factors based on the length of elements and on the location of loading on components

More comprehensive and up-to-date than previous editions, Peterson's Stress Concentration Factors is an essential addition to the professional libraries of engineers and designers working in the automotive, aerospace, and nuclear industries; for civil and mechanical engineers; and for students and researchers in these fields.

### **About the Author**

**Walter D. Pilkey** is the Frederick Morse Professor in the Department of Mechanical and Aerospace Engineering at the University of Virginia and a leading authority in the areas of stress and strain in

mechanical and civil engineering. He is the author of *Formulas for Stress, Strain, and Structural Matrices*, Second Edition and *Analysis and Design of Elastic Beams*, also available from Wiley.

**Deborah F. Pilkey** is an Engineer/Scientist in the Loads & Environments Department at ATK Launch Systems in Utah. She has been involved with structures technology, loads, dynamics, and production stress analysis of the Space Shuttle's main engines and their solid rocket motors.

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