

Propagation of Sound in Porous Media

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J.F. Allard

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This book is devoted to the physics and mathematics of sound propagation through porous materials. The essentials of acoustic impedance, reflection of sound, and flow resistance of materials is given in the introductory chapters. The text then covers sound propagation in porous materials, including porous materials in general and materials having circular pores. The Biot theory is then applied to the acoustical properties of materials that have an elastic frame, such as acoustical foam materials.

Another chapter in the book deals with the modelling of porous layers, and emphasizes the use of transfer matrices in the prediction of the impedance of such structures. Two additional topics are covered; the effects of perforated facings on the sound absorptive properties of materials and sound transmission in stratified porous materials.

Throughout the book, the treatment is generally mathematical, and is in a form that lends itself to mathematical modelling of porous materials. Many of the calculated results are given in figures; the author offers to supply copies of the computer programs that have been used to calculate impedance and transmission coefficients.