least several specific problems of muscle contraction. The analysis has enhanced our understanding of the dynamic relationship between the active contractile and passive elastic response of muscle. It appears that wave propagation plays an important role in muscle dynamics. We expect in the future to apply the linearized method to more complex problems. In particular, we plan to extend the foregoing solutions to apply to the complicated geometric situation of myocardial contraction.

References

Problems of Impact


REVIEWED BY STEPHEN L. RICE1

The primary contribution of this book is the collection, under a single cover and at a uniform introductory level, of analytical methods and empirical observations pertaining to an exceedingly wide range of problems of impact. In developing the book, the author approaches his subject from the tradition of "Mechanics of Materials" as contrasted to that of "Mechanics of Continuous Media." The reader is assumed to possess background knowledge in mathematics and in static strength of materials at a level equivalent to that of an advanced undergraduate. The book is highly readable and is written with considerable attention to detail.

The first three chapters are concerned with an introduction to elastic stress wave theory. Chapter 1 provides a clear treatment of one-dimensional waves in long bars. Chapter 2 gives a wide range of applications of this material, including a discussion of spalling and of wave propagation in helical springs. Chapter 3 extends the analytical treatment of Chapter 1 to include the effect of transverse motion of elements in a long bar. Also presented in this chapter are elastic waves in an extended isotropic medium, including body waves and surface waves, and a qualitative description of the reflection and refraction of plane waves at a plane interface.

Chapter 4 provides an introduction to plasticity theory. The basic notions of stress, strain, and strain-rate are reviewed, and equations for no volume change in the deformation of simple geometric shapes are developed. Several mechanical equations of state are presented and the significance of neglecting strain-rate

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Strength of materials, also called mechanics of materials, deals with the behavior of solid objects subject to stresses and strains. The theory began with the consideration of the behavior of one and two dimensional members of structures, whose states of stress can be approximated as two dimensional, and was then generalized to three dimensions to develop a more complete theory of the elastic and plastic behavior of materials. An important founding pioneer in mechanics of materials was Stephen Timoshenko. Impact strength, sometimes referred to as toughness, refers to a material’s ability to respond to sudden impacts. A material with high toughness, like polycarbonate or nylon, can absorb energy and plastically deform before it fractures. In simpler terms, a material with high impact strength can be dropped on the floor without breaking. “Toughness” or impact strength isn’t synonymous with stiffness. More compliant materials can rate highly when it comes to absorbing sudden shock. For the highest impact strength among Formlabs materials, choose Durable Resin. Other materials with high impact strength... found in literature on impact strengths of metallic composite materials at elevated temperatures, which may be essential during their use. Because of this, the purpose of this work was to investigate the impact strength of composite materials with aluminum alloy EN AC-44200 matrix reinforced with Al2O3 particles in the temperature range of 20°C to 300°C.