

APPLICATION OF A NEW TECHNOLOGY TO THE DESIGN OF EFFECTIVE ANTI-VIBRATION GLOVES

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SUMMARY

Gloves that attenuate vibration above approximately 25 Hz and that exceed the characteristics of standard viscoelastic gloves have been developed using an air bladder system in the palm and fingers of a glove. Testing was performed on a variety of viscoelastic gloves currently marketed to obtain the ratio of energy leaving the handle of a vibrating device and the energy entering the hand. Several simple rectangular air bladders of varying thickness were developed and tested for their vibration attenuating characteristics. A four degree-of-freedom, lumped-parameter model of the vibration response of the human hand and air bladder was developed using measured hand and bladder parameters. This model, along with subjective criteria, was used to design and fabricate two prototype air bladder gloves. These gloves were tested and found to exceed adopted standard requirements and the characteristics of standard viscoelastic gloves. The prototypes in this study will be further developed, adapted and marketed for practical applications.

Key words: gloves, air bladders, antivibration

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