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VIBRATION AND SHOCK— HAND-TRANSMITTED VIBRATION— MEASUREMENT AND MEDICAL SCREENING



STANDARDS ASSOCIATION OF AUSTRALIA
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AUSTRALIAN STANDARD

**VIBRATION AND SHOCK—
HAND-TRANSMITTED
VIBRATION—
MEASUREMENT AND
MEDICAL SCREENING**

AS 2763—1985

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PREFACE

This standard was prepared by the Association's Committee on Vibration and Shock in response to a request from Australian industry and governmental institutions. It is based on ISO/DIS 5349.2, Guide for the Measurement and the Assessment of Human Exposure to Vibration Transmitted to the Hand, but includes only those parts relating to physical measurement of vibration and an addition dealing with medical screening and advice.

Intensive vibration can be transmitted from vibrating tools, vibrating machinery or vibrating workpieces to the hands and arms of operators. Such situations occur, for example, when a person handles pneumatic and electric handtools and in forestry work when a person handles chainsaws. These vibrations are usually transmitted through the hand and arm to the shoulder. Depending on the situation, they can be transmitted to one arm only or to both arms simultaneously. The vibration of body parts and the perceived vibration are frequently the source of discomfort and possibly reduced proficiency. Continued, habitual use of many vibrating tools has been found to be connected with various patterns of diseases affecting the blood vessels, nerves, bones, joints, muscles or connective tissues of the hand and forearm.

The vibration exposures required to cause these disorders are not known exactly with respect to vibration intensity and the vibration frequency spectrum or with respect to daily exposure time and the total exposure period. Collection of reliable data on how vibration exposure affects human health has proved to be extremely difficult for many reasons. In view of the complexity of the problem and the paucity of quantitative data concerning the occupational health effect of hand-transmitted vibration, it is difficult to propose a firm standard regarding the evaluation of such vibration and to recommend limits for safe exposure, particularly in relationship to problems other than Vibration White Finger (VWF). Persons seeking guidelines for the evaluation of hand-transmitted vibration exposure should refer to Annex A of ISO/DIS 5349.2, where a dose-effect relationship is presented in terms of the frequency-weighted energy equivalent acceleration for a period of 4 h.

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STANDARDS ASSOCIATION OF AUSTRALIA**Australian Standard****for****VIBRATION AND SHOCK—****HAND-TRANSMITTED VIBRATION—MEASUREMENT AND MEDICAL SCREENING****SECTION 1. SCOPE AND GENERAL**

1.1 SCOPE. This standard sets out general methods for measuring and reporting hand-transmitted vibration exposure in three orthogonal axes for the one-third octave bands having centre frequencies from 6.3 Hz to 1250 Hz and octave bands having centre frequencies from 8 Hz to 1000 Hz.

1.2 APPLICATION. This standard applies to periodic and non-periodic vibration. Provisionally, this standard may also be applied to continuous (repeated) shock type excitation.

Appendix A outlines measures that should be adopted to medically screen people who are either involved or propose becoming involved with hand-transmitted vibration in their occupation. This Appendix also explains some techniques that will normally be useful in

reducing the severity of hand-transmitted vibration and the incidence of vibration induced physiological signs of damage to the hands.

1.3 REFERENCED DOCUMENTS. The following documents are referred to in this standard:

- AS Z41** Octave, Half Octave and One-third Octave Band Pass Filters Intended for the Analysis of Sound and Vibrations
- IEC 184** Methods for Specifying the Characteristics of Electro-mechanical Transducers for Shock and Vibration Measurements
- IEC 222** Methods for Specifying the Characteristics of Auxiliary Equipment for Shock and Vibration Measurement