AS 1949—1988

Australian Standard®

ACOUSTICS—MEASUREMENT OF AIRBORNE NOISE EMITTED BY VESSELS IN WATERWAYS, PORTS AND HARBOURS

This Australian Standard was prepared by Committee AV/5, Acoustics—Community Noise. It was approved on behalf of the Council of the Standards Association of Australia on 11 May 1988 and published on 15 July 1988.

The following interests are represented on Committee AV/5:

Association of Consulting Engineers, Australia
Australian Acoustical Society
Australian Environment Council
Australian Institute of Health Surveyors
Australian Institute of Petroleum
Australian and New Zealand Pulp Industry Technical Association
Australian Road Research Board
Bureau of Steel Manufacturers of Australia
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Department of Transport and Communications
Institute of Marine Engineers
National Acoustics Laboratories
National Association of Australian State Road Authorities
National Building Technology Centre
Royal Australian Institute of Architects
Royal Australian Planning Institute

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PREFACE

This Standard was prepared by the Association's Committee on Acoustics—Community Noise, to supersede AS 1949—1976, *Method for the measurement of airborne noise emitted by vessels on waterways, ports and harbours.*

The Standard is based on the International Standard ISO 2922, *Acoustics—Measurement of noise emitted by vessels on inland waterways and harbours.*

This Standard refers to the measurement of noise emitted by vessels where particular problems exist because of the specialized nature of the noise generation and the many variables that affect its propagation. The methods given serve as a basis for comparison and are considered to be suitable for general application. However, because of the nature of such noise generation, simplified methods of measurement and assessment may not be applicable in every circumstance. In such cases, recourse may be necessary to detailed analysis of the noise spectrum.

The test procedures described in this Standard are simplified engineering methods. It should be noted, however, that frequency band analysis is only recommended for type tests or where specific difficulties arise with the use of simplified methods. Measurement may be made of sources emitting noise of an impulsive character by an impulse sound level meter.

This Standard does not deal with vibration or with acceptability criteria.

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Australian Standard

ACOUSTICS—MEASUREMENT OF AIRBORNE NOISE EMITTED BY VESSELS IN WATERWAYS, PORTS, AND HARBOURS

1 SCOPE. This Standard describes the methods and conditions for obtaining reproducible and comparable measurements of the noise level and the noise spectrum emitted by vessels of all kinds on waterways and in ports and harbours.

NOTE: Additional information on sound measurement techniques can be found in AS 2659.1 and AS 2659.2.

2 DEFINITIONS. For the purpose of this Standard, the definitions given in AS 1633 and those below apply.

2.1 Vessel—every description of water craft, including non-displacement craft, used or capable of being used as a means of transportation or recreation on water.

2.2 Small vessel—any vessel up to 15 m in length.

2.3 Prototype and acceptance tests—tests that are performed to determine whether the vessel complies with noise specifications or prescribed limits.

2.4 Monitoring tests—tests that are performed in order to check that the noise emission in the vessel is still within prescribed limits and that no significant changes have occurred since the prototype or acceptance tests.

3 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS

1055 Acoustics—Description and measurement of environmental noise
Part 1: General procedures (AS 1055.1)
Part 2: Application to specific situations (AS 1055.2)

1259 Sound level meters

1633 Acoustics—Glossary of terms and related symbols

2659 Guide to the use of sound measuring equipment
Part 1: Portable sound level meters (AS 2659.1)
Part 2: Portable equipment for the integration of sound signals (AS 2659.2)

2680 Acoustics—Performance for tape recording equipment for use in acoustical measurement system

Z41 Octave, half octave and one-third octave band pass filters intended for the analysis of sound and vibrations

4 NATURE OF TESTS. For prototype and acceptance tests, the recommended test procedures shall be followed. If variations are made, these shall be stated in the test report.

For monitoring tests, minor deviations from the test conditions recommended for prototype and acceptance tests may be acceptable, e.g. the number of measurement positions and the number of engine operating conditions may be reduced.

5 MEASUREMENTS. Measurements are to be made in accordance with the procedure set out in AS 1055.2, AS 2659.1, and AS 2659.2. The value to be measured in prototype, acceptance, and monitoring tests shall include the A-weighted sound pressure level (L_A) for the overall sound level expressed in decibels(A) for 'F' time weighting.

For steady-state noise, the reading shall be taken as the average of the maximum levels measured during the relevant time interval. The occurrence and duration of the levels shall be determined over a sufficient time to obtain a representative sample of the noise effect. A check on the performance of the instrumentation shall be carried out immediately before and after measurements are made.

For noise of a transient type, 'I' time weighting may be used.

For spectral analysis in prototype tests or for the determination of some special acoustic characteristics of noise emission, the values to be measured shall be octave or one-third octave band sound pressure levels in decibels (see also Note 2 to Clause 6.1). As the attenuation of sound from a point source is different from that from a line source, the type of source should be recorded where possible.

NOTES:

1. Care should be taken to prevent influence on the result from unwanted sound signals, e.g. noise from wind on the microphone of the measuring equipment, electrical interference, or extraneous sound sources not under consideration.
2. Where measurements are made at some distance from the source (e.g. more than 30 m), the levels observed may be affected considerably by the weather conditions. For example, the attenuation of sound due to air absorption is affected by the temperature and humidity of the air. In addition, the bending of sound waves due to wind and temperature gradients will affect the levels received at a particular position. It is recommended that measurements not be taken in extreme or atypical climatic conditions. If possible, a value obtained under typical climatic conditions, and an indication of the range of values obtained under other climatic conditions, should be included.

6 EQUIPMENT.

6.1 Sound level meter. The sound level meter shall comply with at least the requirements for Type 2 meters of AS 1259.

For certain purposes, such as comparing noise emitted by recreation craft, a sound level meter complying with the requirements for Type 3 meters of AS 1259 may be used. However, in cases of dispute, recourse shall be had to a precision sound level meter complying with the requirements for Type 1 meters of AS 1259.