AS 4748—2001
Reconfirmed 2017

Australian Standard™

Acoustic emission testing of fibreglass-insulated booms on elevating work platforms

Standards Australia

This Australian Standard was prepared by Committee MT-007, Non-destructive Testing of Metals and Materials. It was approved on behalf of the Council of Standards Australia on 15 October 2001 and published on 26 November 2001.

The following interests are represented on Committee MT-007:

Australasian Railway Association
Australian Aerospace Non-Destructive Testing Committee
Australian Industry Group
Australian Institute for Non-Destructive Testing
Australian Nuclear Science & Technology Organization
Australian Pipeline Industry Association
Bureau of Steel Manufacturers of Australia
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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.com.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

This Standard was issued in draft form for comment as DR 96156.

STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 4748—2001
Acoustic emission testing of fibreglass-insulated booms on elevating work platforms

RECONFIRMATION NOTICE

Technical Committee MT-007 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 2 March 2017.

The following are represented on Technical Committee MT-007:

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National Association of Testing Authorities Australia
New Zealand Non-Destructive Testing Association
TestSafe Australia
Welding Technology Institute of Australia
WorkSafe Victoria

NOTES

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First published as AS 4748—2001.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 4164 9

PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/ Standards New Zealand Committee MT-007, Non-destructive Testing of Metals and Materials. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand, Standard.

This Standard is published as an Australian Standard at the request of Standards New Zealand.

The objective of the Standard is to describe a procedure for the acoustic emission testing of the insulated fibreglass-reinforced plastic sections contained in the booms of elevating work platforms, to specify rejection criteria and give recommended testing intervals.

During the preparation of this Standard, cognizance was taken of the following American Standards:

ASTM

E750-98 Practice for characterizing acoustic emission instrumentation

F914-98 Test method for acoustic emission for insulated aerial personnel devices

In addition, some of the requirements of this Standard, in terms of figures, events and counts, are based on empirical results obtained by ATTAR (Australia) and Mercury Energy (New Zealand) over the period 1986 to 1996.

No international Standards (ISO) have been published on the subject.

Acoustic emission testing of fibreglass composite structures is an evolving science. Although some sources within the scientific community suggest that the test may require a longer hold time at the final load of the loading cycle, this Standard aligns with current established international practice for testing the booms of elevating work platforms. Users of the Standard should be aware that if strong scientific justification to extend the final loading cycle is produced, the Standard will be subject to an immediate corrigenda.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

CONTENTS

FOREWORD

The acoustic emission test method provides a means of evaluating transient stress waves generated by the rapid release of energy from localized sources within the insulated boom section of the elevating work platform under controlled loading. The energy releases occur during intentional applications of a controlled, predetermined load and can be monitored and interpreted by qualified personnel.

The test method in this Standard utilizes objective criteria for evaluation and may be discontinued at any time to investigate a particular area of concern, or prevent a defect from continuing to ultimate failure or affecting the structural integrity or intended use of the elevating work platform.

STANDARDS AUSTRALIA

Australian Standard

Acoustic emission testing of fibreglass-insulated booms on elevating work platforms

1 SCOPE

This Standard describes a procedure for acoustic emission (AE) testing of elevating work platforms (EWPs) incorporating fibreglass-insulated reinforced plastic (FRP) booms.

The acoustic emission test method is used to establish the structural integrity of the boom by detecting and locating any acoustic emission source areas. Verification of whether structural defects are the cause of acoustic emission sources may require the use of other non-destructive test (NDT) methods such as radiography, ultrasonics, liquid penetrant and visual inspection.

This Standard is based on four minute load hold periods which may not give 100% strain equalization in the fibreglass. Longer holding cycles of up to 35 minutes are employed when the acoustic emission continues at the end of any load hold period.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1418	Cranes (including hoists and winches)
1418.10	Part 10: Elevating work platforms
1929	Non-destructive testing—Glossary of terms
2193	Methods for the calibration and grading of force-measuring systems of testing machines
2549	Cranes (including hoists and winches)—Glossary of terms
2550	Cranes—Safe use
2550.10	Part 10: Elevating work platforms
3669	Non-destructive testing—Qualification and registration of personnel—Aerospace
3998	Non-destructive testing—Qualification and certification of personnel—General engineering
ASTM	
E650	Guide for mounting piezoelectric acoustic emission sensors
E750	Practice for characterizing acoustic emission instrumentation
E1316	Terminology for nondestructive examinations

3 DEFINITIONS

For the purpose of this Standard, the terms and definitions given in AS 1929, AS 2549, ASTM E1316 and those below, apply.