AS ISO 12494—2005 ISO 12494:2001 Reconfirmed 2016

Australian Standard[™]

Atmospheric icing of structures



This Australian Standard was prepared by Committee BD-006, General Design Requirements and Loading on Structures. It was approved on behalf of the Council of Standards Australia on 3 March 2005.

This Standard was published on 26 April 2005.

The following are represented on Committee BD-006:

Association of Consulting Engineers Australia Australian Steel Institute Cement and Concrete Association of Australia Concrete Masonry Association of Australia CSIRO, Building, Construction and Engineering Cyclone Testing Station—James Cook University Electricity Supply Association of Australia Housing Industry Association Institution of Engineers Australia Master Builders Australia Steel Reinforcement Institute of Australia University of Melbourne University of Newcastle

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Web Shop at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

Australian StandardsTM and other products and services developed by Standards Australia are published and distributed under contract by SAI Global, which operates the Standards Web Shop.

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.org.au, or write to the Chief Executive, Standards Australia, GPO Box 5420, Sydney, NSW 2001.

This Standard was issued in draft form for comment as DR 04178.

AS ISO 12494-2005 (Reconfirmed) 2016-07-15

STANDARDS AUSTRALIA

RECONFIRMATION

OF AS ISO 12494—2005 Atmospheric icing of structures

RECONFIRMATION NOTICE

Technical Committee BD-006 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 17 May 2016.

The following are represented on Technical Committee BD-006:

Australasian Wind Engineering Society Australian Building Codes Board Australian Steel Institute Cement Concrete & Aggregates Australia - Cement Concrete Masonry Association of Australia Department of Building and Housing (New Zealand Government) Engineers Australia Forest and Wood Products Australia Housing Industry Association Institution of Professional Engineers New Zealand James Cook University Master Builders Australia New Zealand Heavy Engineering Research Association Property Council of Australia Steel Reinforcement Institute of Australia Swinburne University of Technology The University of Melbourne Think Brick Australia University of Canterbury New Zealand University of Newcastle

Australian Standard[™]

Atmospheric icing of structures

First published as AS ISO 12494—2005.

COPYRIGHT

© Standards Australia

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia, GPO Box 5420, Sydney, NSW 2001, Australia ISBN 0 7337 6639 0

PREFACE

This Standard was prepared by the Standards Australia Committee BD-006, General Design Requirements and Loading on Structures.

This Standard is identical with and has been reproduced from ISO 12494:2001, Atmospheric icing of structures.

The objective of this Standard is to provide designers of structures and those collecting data on ice formation in Australia with general guidance on assessment of ice accumulations and loadings on structures for use in structural design. It is intended to be used as further background to AS/NZS 1170.3.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text 'this International Standard' should read 'this Australian Standard'.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to equivalent Australian Standards as follows:

Reference to International Standard		Australian Standard	
ISO		AS	
2394	General principles on reliability for structures	5104	General principles on reliability for structures
4354	Wind actions on structures (Note that the reference in Clause 8.1 is incorrectly stated as ISO 4355)	1170 1170.2	Structural design actions Part 2: Wind actions

It should be noted that the clauses on combinations of actions do not align with the format set out in AS/NZS 1170.0. The ice classes, associated masses and drag factors are based on accumulations with an annual probability of exceedance of 1/50. A special study should be carried out to establish the appropriate adjustments to make to factors and to establish combination factors to use with any collected data.

CONTENTS

1 1.1 1.2	Scope General Application	1
2	Normative references	2
3	Terms and definitions	2
4	Symbols	3
5 5.1 5.2 5.3 5.4 5.5	Effects of icing General Static ice loads Wind action on iced structures Dynamic effects Damage caused by falling ice	4 4 4 4 4
6 6.1 6.2 6.3 6.4	Fundamentals of atmospheric icing General cing types Topographic influences Variation with height above terrain	5 6 9
7 7.1 7.2 7.3 7.4 7.5 7.6	cing on structures	10 10 10 11 11 12
8 8.1 8.2 8.3 8.4	Wind actions on iced structures General Single members Angle of incidence Lattice structures	19 20 27
9 9.1 9.2	Combination of ice loads and wind actions General Combined loads	29
10	Unbalanced ice load on guys	30
11	Falling ice considerations	31
Annex	(informative) Equations used in this International Standard	
	(informative) Standard measurements for ice actions	
Annex	(informative) Theoretical modelling of icing	39
	(informative) Climatic estimation of ice classes based on weather data	
	(informative) Hints on using this International Standard	
	aphy	