

Australian/New Zealand Standard™

Roof safety mesh



AS/NZS 4389:2015

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee BD-092, Housing Construction—Working Practices. It was approved on behalf of the Council of Standards Australia on 15 June 2015 and on behalf of the Council of Standards New Zealand on 11 June 2015.
This Standard was published on 30 June 2015.

The following are represented on Committee BD-092:

Australasian Wire Industry Association
Australian Council of Trade Unions
Australian Industry Group
Australian Institute of Building Surveyors
Housing Industry Association
Master Builders Australia
Master Plumbers Australia
National Edge Protection and Platform Association
Roofing Association of New Zealand
Roofing Tile Association of Australia
Site Safe New Zealand
WorkCover New South Wales

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 Standards may also be withdrawn.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 joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.saiglobal.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR AS/NZS 4389:2014.

Australian/New Zealand Standard™

Roof safety mesh

First published as part of AS CA44—1969.
Revised and redesignated AS 1639—1974.
AS 2424 first published 1981.
AS 1639 second edition 1990.
AS 2424 second edition 1991.
AS 1639—1990 and AS 2424—1991 revised, amalgamated and redesignated
in part as AS/NZS 4389:1996.
Second edition 2015.

COPYRIGHT

© Standards Australia Limited/Standards New Zealand

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, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140.

ISBN 978 1 76035 144 1

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD-092, Housing Construction—Working Practices, to supersede AS/NZS 4389:1996, *Safety mesh*.

The objective of this Standard is to provide manufacturers and users of roof safety mesh with specifications covering the manufacture and performance of roof safety mesh for use in building applications.

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.

This Standard incorporates a Commentary on some Clauses. The Commentary directly follows the relevant clause, is designated by ‘C’ preceding the clause number and is printed in italics in a panel. The Commentary is intended to help readers understand the background to the clause but does not form part of the clause.

CONTENTS

	<i>Page</i>
1 SCOPE	4
2 NORMATIVE REFERENCE.....	4
3 DEFINITIONS	4
4 NEW DESIGNS, INNOVATIONS AND MATERIALS.....	5
5 ROOF SAFETY MESH COVERAGE	5
6 GENERAL REQUIREMENTS	5
7 WIRE AND MESH REQUIREMENTS	6
8 PERFORMANCE REQUIREMENTS	7
9 INSTALLATION REQUIREMENTS	8
10 DURABILITY	13
 APPENDICES	
A ROOF SAFETY MESH—LOAD TEST	14
B MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS STANDARD	19
 BIBLIOGRAPHY.....	 21

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Roof safety mesh**

1 SCOPE

This Standard specifies minimum requirements for the design, construction, testing and installation of roof safety mesh as a primary means for fall protection when working at heights in domestic, commercial and industrial building applications that use metal or timber purlins, or a tested supporting member.

NOTE: Means for demonstrating compliance with this Standard are given in Appendix B.

2 NORMATIVE REFERENCE

The following is the normative document referenced in this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS/NZS

4534 Zinc and zinc/aluminium-alloy coatings on steel wire

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

3.1 Fastener

A ring fastener (or 'hog ring') used for joining side laps of roof safety mesh.

3.2 Fixing

Connections between the roof safety mesh and the roof member.

3.3 Joints

Connections between rolls or sections of roof safety mesh.

3.4 Lapping

Where the sides of roof safety mesh are overlayed to prevent a gap forming between the two.

3.5 Longitudinal wires

Wires of roof safety mesh that span between purlins and are welded to transverse wires; *also* known as line wires.

3.6 Mesh sag

A measurement of downward deflection of roof safety mesh between two roof members.

3.7 Purlin

Beam, parallel to the eaves, that is supported by rafters and gives support to roof cladding.

3.8 Roof member

A supporting member to which the roof safety mesh is attached, and which has the structural capacity to ensure the performance requirements of Clause 8 and Appendix A can be met.

NOTE: Typically purlins or rafters, but may include bridge bars or other members.

3.9 Roof safety mesh

Steel wire mesh, comprising longitudinal and transverse wires, fixed to an appropriate roof member to prevent persons from falling during installation of roofing materials and support insulation materials.

C3.9 Roof safety mesh is intended to control the risk of fall hazards over the entire roof area, including penetrations, both during construction and after the building enters service.

3.10 Staples

Component used for fixing the ends of longitudinal wires to appropriate timber roof members.

3.11 Transverse wires

Wires of roof safety mesh that are parallel to the purlins and are welded to the longitudinal wires; *also* known as cross-wires.

3.12 Ultraviolet (UV) protection

The stabilization process applied to materials susceptible to deterioration from UV radiation.

4 NEW DESIGNS, INNOVATIONS AND MATERIALS

This Standard shall not be interpreted as preventing the use of materials that meet the performance requirements set out in this Standard, or are not specifically referred to herein. Any alternative materials, designs, methods of assembly, procedures, or the like, that do not comply with specific requirements of this Standard, but give equivalent results to those specified are not necessarily precluded, provided equivalent performance is demonstrated.

5 ROOF SAFETY MESH COVERAGE

Roof safety mesh shall be installed over the entire roof area, including penetrations, and remain in place for fall protection.

6 GENERAL REQUIREMENTS

6.1 Corrosion protection of steel wire

Steel wire mesh shall be galvanized, in accordance with Clause 7.1.1(b).

NOTE: For durability requirements for New Zealand, see Clause 10.2.

6.2 Corrosive exposure conditions

When installed in conditions having a high risk of corrosion adversely affecting the performance within its service life, roof safety mesh shall be protected by the application of a suitable protective coating.

NOTE: For guidance on external climatic conditions that can cause a high risk of corrosion, see AS/NZS 4534. Internal conditions e.g. from manufacturing/production processes, chemical exposure, etc., may also need to be considered.

6.3 Ultraviolet (UV) protection

Where a roof safety mesh or a coating material is susceptible to UV degradation, it shall be UV stabilized.

6.4 Injury

Apart from the cut ends, roof safety mesh shall be free of defects, sharp edges, burrs and similar imperfections that may cause injury to the handler or installer.

6.5 Longitudinal wires

Longitudinal wires shall comply with the following requirements:

- (a) Longitudinal wires shall have sufficient strength to withstand the loads imposed by the test criteria in Appendix A.
- (b) Longitudinal wires connected to the appropriate roof members shall not develop cracks or other potential structural defects when wrapped around or otherwise connected to appropriate roof members.

7 WIRE AND MESH REQUIREMENTS

7.1 Materials

7.1.1 Wire

The wire for mesh shall comply with the following:

- (a) The wire shall be clean, smooth and free from defects detrimental to its subsequent processing and end use.
- (b) The wire shall be galvanized in accordance with AS/NZS 4534, Class W02.
- (c) The wire shall have the following minimum tensile strengths:
 - (i) Transverse wire 450 MPa.
 - (ii) Longitudinal wire 500 MPa.

7.1.2 Mesh

Mesh shall comply with the following:

- (a) *Mesh construction* Mesh construction shall be formed by welding of wires using electric resistance techniques under pressure, and shall comply with the requirements of Tables 1, 2 and 3.
- (b) *Freedom from defects* The mesh shall be clean, smooth and free from sharp edges, burrs and similar defects.

TABLE 1
REQUIREMENTS FOR
ROOF SAFETY MESH

Minimum nominal diameter of wire mesh mm	Spacing of longitudinal wires mm	Spacing of transverse wires mm	Minimum mass of zinc coating g/m ²
2.00	150 ±5	300 ±5	35

TABLE 2
REQUIREMENTS FOR ROOF SAFETY MESH STAPLES

Minimum mass of zinc coating g/m ²	Minimum nominal diameter of staple wire mm	Minimum length of staple		Maximum spacing of staples mm
		Stapling onto side of timber rafter mm	Staples on top of timber rafter mm	
35	3.15	30	40	155

TABLE 3
REQUIREMENTS FOR ROOF SAFETY MESH FASTENERS

Crown width of fastener mm	Opening width of fastener mm	Coating type	Fastener size mm
22	16	Galvanized	1.90 diameter or equivalent strip

7.2 Product documentation

7.2.1 Documented information

Appropriate documented information, written in plain English and adopting SI units, shall be provided with the roof safety mesh.

The documentation information shall include the following:

- (a) The supplier and country of manufacture.
- (b) The diameters of the roof safety mesh wires.
- (c) The minimum tensile strengths of the roof safety mesh wires.
- (d) The dimensions of the mesh aperture, in millimetres.
- (e) The width of the mesh in the roll, in metres.
- (f) The nominal weight of the mesh roll, in kilograms.
- (g) Information on the coating procedure of the steel wires of the mesh.
- (h) If plasticized materials are used, the UV stabilization rating.
- (i) The safety procedures applicable when opening a roll of mesh.
- (j) Installation instructions.
- (k) Statement of compliance with this Standard, i.e. AS/NZS 4389.

7.2.2 Labelled information

Each roll shall be labelled with the following:

- (a) The length of mesh in the roll, in metres.
- (b) The width of mesh in the roll, in metres.
- (c) The weight of mesh in the roll or weight/metre.
- (d) The diameters of the roof safety mesh wires, in millimetres.
- (e) The dimensions of the mesh aperture, in millimetres.
- (f) The manufacturer's/supplier's details and country of manufacture.
- (g) Installation instructions, including tautness requirements.
- (h) Statement of compliance with this Standard, i.e. AS/NZS 4389.

8 PERFORMANCE REQUIREMENTS

When tested in accordance with Appendix A, the test probe shall not pass through the roof safety mesh or side lap.