

Australian/New Zealand Standard

Eye protectors for industrial applications

[Defence Title allocated by Codification and Standardisation Authority:
PROTECTOR, EYE—INDUSTRIAL
NATO Supply Classification 4240]

AS/NZS 1337:1992

This Standard was prepared under a joint arrangement by Standards Australia and Standards New Zealand. It was approved for publication on behalf of the Council of Standards Australia on 6 August 1992 and on behalf of the Standards Council of New Zealand on 5 June 1992. It was published on 16 November 1992.

The following organizations are represented on the Committees responsible for this Standard:

Standards Australia Committee SF/6, Eye Protection

Australian and New Zealand Society of Occupational Medicine
Australian Chamber of Commerce
Australian Medical Association
Australian Optometrical Association
Australian Welding Institute
Bureau of Steel Manufacturers of Australia
Confederation of Australian Industry
Department of Defence
Department of Industrial Affairs, Qld
Department of Labour, Vic.
Department of Occupational Health, Safety and Welfare, W.A.
Electricity Supply Association of Australia
Optical Distributors and Manufacturers Association of Australia
National Safety Council of Australia
Queensland University of Technology School of Optometry
Railways of Australia Committee
Royal Australian Chemical Institute
Safety Institute of Australia
University of Melbourne School of Optometry
University of New South Wales School of Optometry
WorkCover Authority New South Wales

Standards New Zealand Board 50/-, Mechanical and General

Accident Compensation Corporation
Chemical Industry Council (N.Z.)
Consumers Institute
Department of Labour
Department of Scientific Industrial Research Physical Science
Institution of Professional Engineering New Zealand
Ministry of Commerce
Ministry of Transport
National Council of Women
New Zealand Manufacturers Federation

Additional interests participating in preparation of Standard:

Australian Radiation Laboratory

Review of Standards. To keep abreast of progress in industry, Joint Australian/New Zealand Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Joint Standards and related publications will be found in the Standards Australia and Standards New Zealand Catalogue of Publications; this information is supplemented each month by the magazines 'The Australian Standard' and 'Standards New Zealand', which subscribing members receive, and which give details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Joint Standards, addressed to the head office of either Standards Australia or Standards New Zealand, are welcomed. Notification of any inaccuracy or ambiguity found in a Joint Australian/New Zealand Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

*This Standard was issued in Australia in draft form for comment as DR 91189
and in New Zealand as DZ 5816.*

Australian/New Zealand Standard

Eye protectors for industrial applications

In Australia
First published as AS B99-1951.
Revised and redesignated AS Z7-1967.
Revised and redesignated AS 1337-1974.
Second edition 1981.
Third edition 1984.

In New Zealand
First published as NZS 5816:1986.

AS 1337-1984 and NZS 5816:1986 revised,
amalgamated and designated as Joint
Standard AS/NZS 1337:1992.

Incorporating:
Amdt 1—1994
Amdt 2—1997

PUBLISHED JOINTLY BY:

STANDARDS AUSTRALIA
1 The Crescent,
Homebush NSW 2140 Australia

STANDARDS NEW ZEALAND
Level 10, Radio New Zealand House,
155 The Terrace,
Wellington 6001 New Zealand

ISBN 0 7262 7762 2

PREFACE

This Standard was prepared by the Standards Australia Committee on Eye Protection to supersede AS 1337–1984 and NZS 5816:1986. It is issued as a joint Standard under the terms of the Active Cooperation Agreement between Standards Australia and Standards New Zealand with the objective of reducing technical barriers to trade between the two nations.

The Committee on Eye Protection currently intends to replace the ‘drop-ball’ method for determining low impact resistance (given in Appendix C) with the ‘ballistic’ method (given in Appendix D) in a future edition. The two methods are given in this edition to allow manufacturers and testing facilities time to assess the equivalence of the results given by the two methods and, if necessary, to acquire the ballistic testing equipment. The drop-ball test is retained as the low impact resistance test method in this edition.

In the time since this Standard was last revised, industrial and testing experience has shown that some eye protectors deform on impact with the potential for transmitting impact force to the eye area, and plastic lenses can be penetrated by a sharp object without breaking. Therefore, this edition contains new requirements that, in the impact test, no part or fragment of the eye protector shall make contact with the eye area of the test headform, and that plastic lenses should be penetration resistant. Also, a method for determining fluorescence in lenses, and a limit for fluorescence have been included for the first time, as excess fluorescence may affect the visual discrimination of the wearer.

It should be recognized that complete protection for the eye cannot be provided solely by the use of eye protectors. Relevant factors for a particular application should be considered in the choice of the correct eyewear to provide the maximum possible protection. AS 1336, *Recommended practices for eye protection in the industrial environment*, should be consulted for the appropriate measures to be taken into account.

The material and optical requirements described in this Standard maintain uniformity (where appropriate) with the following Standards:

AS/NZS

2228 *Spectacles*

2228.1 *Part 1: Spectacle lenses*

AS

1609 *Eye protectors for motor cyclists and racing car drivers*

ASTM F803, *Standard specification for eye protectors for use by players of racquet sports*, was referred to during the preparation of this Standard.

© Copyright — STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Users of Standards are reminded that copyright subsists in all Standards Australia and Standards New Zealand publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia or Standards New Zealand may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia or Standards New Zealand. Permission may be conditional on an appropriate royalty payment. Australian requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia. New Zealand requests should be directed to Standards New Zealand.

Up to 10 percent of the technical content pages of a Standard may be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia or Standards New Zealand.

Inclusion of copyright material in computer software programs is also permitted without royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia or Standards New Zealand at any time.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 APPLICATION	4
1.3 REFERENCED DOCUMENTS	4
1.4 DEFINITIONS	4
SECTION 2 REQUIREMENTS FOR LENSES	
2.1 SCOPE OF SECTION	7
2.2 GENERAL REQUIREMENTS FOR LENSES	7
2.3 MATERIAL REQUIREMENTS	7
2.4 OPTICAL PROPERTIES OF LENSES	8
2.5 LOW IMPACT RESISTANCE	10
2.6 MEDIUM IMPACT RESISTANCE	10
2.7 HIGH IMPACT RESISTANCE	10
2.8 PENETRATION RESISTANCE	11
2.9 FLAME PROPAGATION	11
2.10 SPECIAL REQUIREMENTS	11
2.11 TESTING	11
2.12 MARKING OF LENSES AND REPLACEMENT LENS PACKAGING	11
SECTION 3 REQUIREMENTS FOR ASSEMBLED EYE PROTECTORS	
3.1 SCOPE OF SECTION	13
3.2 GENERAL REQUIREMENTS	13
3.3 SPECIAL PERFORMANCE REQUIREMENTS	14
3.4 TESTING	15
3.5 MARKING OF ASSEMBLED EYE PROTECTORS AND PACKAGING	15
SECTION 4 ADDITIONAL REQUIREMENTS FOR ASSEMBLED EYE PROTECTORS FOR WELDING AND ALLIED OPERATIONS	
4.1 SCOPE OF SECTION	17
4.2 DESIGN AND CONSTRUCTION	17
4.3 DESIGN AND CONSTRUCTION OF HELMETS AND HANDSHIELDS	17
4.4 PHYSICAL REQUIREMENTS	18
4.5 TESTING	18
4.6 MARKING OF ASSEMBLED EYE PROTECTORS	18
APPENDICES	
A METHOD FOR THE DETERMINATION OF SPECTRAL TRANSMITTANCE	19
B METHOD FOR THE DETERMINATION OF FLUORESCENCE	22
C METHOD FOR THE DETERMINATION OF LOW IMPACT RESISTANCE (DROP-BALL)	24
D METHOD FOR THE DETERMINATION OF LOW IMPACT RESISTANCE (BALLISTIC)	25
E METHOD FOR THE DETERMINATION OF MEDIUM IMPACT RESISTANCE	27
F METHOD FOR THE DETERMINATION OF HIGH IMPACT RESISTANCE	28
G METHOD FOR THE DETERMINATION OF RESISTANCE TO PENETRATION	29
H METHOD FOR THE DETERMINATION OF FLAME PROPAGATION	30
I METHOD FOR THE DETERMINATION OF NON-ADHERENCE OF MOLTEN METAL	31
J METHOD FOR THE DETERMINATION OF RESISTANCE TO HOT SOLIDS	33
K METHOD FOR THE DETERMINATION OF THERMAL STABILITY AT ELEVATED TEMPERATURES	34
L METHOD FOR THE DETERMINATION OF CORROSION RESISTANCE	35
M METHOD FOR THE DETERMINATION OF SPLASH RESISTANCE	36
N TEST METHOD FOR THE DETERMINATION OF RESISTANCE TO DUST	37
O METHOD FOR THE DETERMINATION OF GASTIGHTNESS	39
P EXAMPLE OF CALCULATION OF LUMINOUS TRANSMITTANCE (τ_c)	40
Q TABLES OF SPECTRAL EFFECTIVENESS AND SPECTRAL IRRADIANCE	41
R EXAMPLE OF CALCULATION OF MEAN TRANSMITTANCES	42
S EXAMPLE OF CALCULATION OF COLORATION LIMITS	43

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Eye protectors for industrial applications

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies minimum requirements for eye protectors and associated lenses designed to provide protection for the eyes of persons in industrial undertakings against common industrial hazards such as flying particles and fragments, dusts, splashing materials and molten metals, harmful gases, vapours and aerosols. Requirements for optical qualities and low, medium and high impact resistance are given and appendices describing appropriate test methods are included in this Standard.

The aim of this Standard is to assist in the provision of safe, efficient and comfortable vision in the industrial situation, including consideration of the need for protection against sunglare and optical radiation in the natural environment.

NOTE: The Standard does not apply to filter lenses for protection against optical radiations generated by industrial processes, which are dealt with in AS/NZS 1338, or to lenses for protection against laser radiation.

1.2 APPLICATION Lenses for eye protectors shall comply with the requirements of Section 2.

Assembled eye protectors shall comply with the requirements of Section 3, and if intended for use in welding and allied operations, with Section 4, also.

NOTE: Where eye protection is incorporated in protective equipment, such as a hood or respirator, the components affording eye protection should comply with the relevant requirements of this Standard.

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

AS/NZS

- 1338 Filters for eye protectors
- 1338.1 Part 1: Filters for protection against radiation generated in welding and allied operations
- 1338.2 Part 2: Filters for protection against ultraviolet radiation
- 1338.3 Part 3: Filters for protection against infra-red radiation

AS

- 1152 Test sieves
- 1680 Interior lighting
- 1680.1 Part 1: General principles and recommendations
- 2900 Quantities, units and symbols
- 2900.6 Part 6: Quantities and units of light and related electromagnetic radiations.

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

1.4.1 Browguard—a faceshield lens holder usually designed for protection to the forehead, often secured by a head harness.

1.4.2 Cover lens—an expendable, transparent cover used to protect lenses or filters (or both) from damage.

1.4.3 Double-glazed lenses—lenses consisting of two or more components separated by an air gap and with the normal line of sight passing through all the components.

1.4.4 Eye protector—a device which includes a lens or lenses worn in front of the eyes and intended to provide protection for the eyes.

1.4.5 Eyeshield—a device which includes a transparent visor supported in front of the face to shield the eyes.

1.4.6 Faceshield—a device which includes a transparent visor supported in front of the face to shield the eyes, face, forehead and front of the neck.

1.4.7 Filter—an optical material used to absorb or reflect (or both) radiation that is emitted during welding and other industrial operations. It may be one of the following types:

- (a) *Active filter*—a filter for which the luminous transmittance is dependent on the incident luminous flux.
- (b) *Passive filter*—a filter for which the luminous transmittance is independent of the incident luminous flux.

1.4.8 Goggles—an eye protector fitting the contour of the face and held in position by an adjustable headband. Goggles are designated by the following types:

- (a) *Eye cup goggles*—an eye protector consisting of two lenses mounted in cups supported by a flexible nose bridge and headband.



SAI GLOBAL

This is a free 6 page sample. Access the full version online.

The remainder of this document
is available for purchase online at

www.saiglobal.com/shop

SAI Global also carries a wide range of publications from a wide variety of Standards Publishers:



SAI GLOBAL



Click on the logos to search the database online.