

Australian/New Zealand Standard

Filters for eye protectors

Part 1: Filters for protection against radiation generated in welding and allied operations

[Defence Title allocated by Codification and Standardisation
Authority: FILTERS FOR EYE PROTECTORS PART 1: FILTERS
FOR PROTECTION AGAINST RADIATION GENERATED IN
WELDING AND ALLIED OPERATIONS
NATO Supply Classification 4240]

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 Industrial Relations and Employment, N.S.W.
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

Standards Association of 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 Sciences
Institution of Professional Engineering New Zealand
Ministry of Commerce
Ministry of Transport
National Council of Women
New Zealand Manufacturers Federation

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 91106 and in New Zealand as DZ 5817.

Australian/New Zealand Standard

Filters for eye protectors

Part 1: Filters for protection against radiation generated in welding and allied operations

In Australia
First published in part as AS B91—1951.
Revised and redesignated AS Z45—1967.
Revised and redesignated AS 1338—1974.
Revised and redesignated in part as
AS 1338.1—1981.

In New Zealand
First published as NZS 5817.1:1983.

AS 1338.1—1981 and NZS 5817.1:1983
revised, amalgamated and designated as
Joint Standard AS/NZS 1338.1:1992.

Incorporating:
Amdt 1—1994

PUBLISHED JOINTLY BY:

STANDARDS AUSTRALIA
1 The Crescent,
Homebush NSW 2140 Australia

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

ISBN 0 7262 7758 4

PREFACE

This Standard was prepared by the Standards Australia Committee on Eye Protection to supersede AS 1338 Part 1—1981 and NZS 5817.1:1983. 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. It incorporates recommended technological and editorial amendments received in response to requests for the review of AS 1338.1/NZS 5817.1, and includes specific requirements for electrically controlled welding filters.

Each part of AS/NZS 1338 prescribes filters for a particular application, the requirements for these filters being substantially aligned with ISO (International Organization for Standardization) requirements. Acknowledgment is made of the assistance received therefrom.

Research undertaken by a number of national and international organizations tends to indicate that less importance may be assigned to the occurrence of infra-red radiation in welding and allied operations, therefore, the limits for maximum infra-red transmission in this Standard have been brought into closer alignment with the requirements in ANZ1 Z87.1 — 1989 *Practice for occupational and educational eye and face protection*.

Appendix E lists a number of definitions, symbols and terms adopted from the following publications:

AS

1852 *International electrotechnical vocabulary*

1852(845) Chapter 845: *Lighting*

2900 *Quantities, units, and symbols*

2900.6 Part 6: *Quantities and units of light and related electromagnetic radiations*

ISO

4007 *Personal eye-protectors—Vocabulary*

This Standard does not apply to filters for eye protectors for protection against laser beams or the microwave portions of the electromagnetic spectrum.

© 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>
FOREWORD	4
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	5
1.2 REFERENCED DOCUMENTS	5
1.3 DEFINITIONS	5
1.4 DESIGNATION OF FILTERS	6
SECTION 2 GENERAL REQUIREMENTS	
2.1 FILTERS FOR GAS WELDING	7
2.2 FILTERS FOR ELECTRIC WELDING	8
2.3 COVER LENSES	12
2.4 ADDITIONAL REQUIREMENTS FOR ACTIVE WELDING FILTERS	12
SECTION 3 TESTING	
3.1 GENERAL	13
3.2 SEQUENCE OR GROUPING OF TEST SPECIMENS	13
SECTION 4 MARKING	
4.1 MARKING OF FILTERS	14
4.2 IDENTIFICATION MARKING OF COVER LENSES	14
4.3 MARKING OF ACTIVE FILTERS	14
APPENDICES	
A GUIDANCE ON SELECTION OF FILTERS FOR PROTECTION AGAINST OPTICAL RADIATION GENERATED DURING WELDING AND ALLIED OPERATIONS	15
B GLOSSARY OF DEFINITIONS, SYMBOLS AND TERMS USED FOR THE SPECIFICATION AND EVALUATION OF FILTERS FOR INDUSTRIAL EYE PROTECTORS	17
C DETERMINATION OF PERMANENCE OF FILTERS	20
D DETERMINATION OF TRANSMITTANCES	21
E DETERMINATION OF THE RESPONSE TIME AND HOLDING TIME OF ACTIVE WELDING FILTERS	22

FOREWORD

In welding operations the maximum possible protection is given to the eyes of welders when the filter in the eye protector being worn has the correct shade number for the work being performed; filters that are too light or insufficiently dense for the job in hand may result in temporary or permanent eye damage, and the use of filters that are too dense, i.e. with shade numbers that are too high for task being done, will lead to poor quality welding and the possibility of injury by accident. The guidelines provided in AS 1336, *Recommended practices for eye protection in the industrial environment*, should be closely followed.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Filters for eye protectors

Part 1: Filters for protection against radiation generated in welding and allied operations

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies requirements for filters used in eye protectors intended to provide protection against radiation of high intensity emitted during welding and allied operations. It specifies the shade numbers and the transmittance requirements of the filters, and applies to filters made of glass or other materials for absorption of radiation.

This Standard also applies to cover lenses employed for the protection of filters from damage by abrasion and weld spatter, and to filters incorporated in demonstration welding booths in so far as the relevant requirements of Table 2.1 and Table 2.2 are appropriate. Requirements for welding curtains and screens are covered in AS 3957/NZS 5852.

NOTE: Guidance on the selection of filters is given in Appendix A.

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

AS/NZS

1337	Eye protectors for industrial applications
1338	Filters for eye protectors
1338.2	Part 2: Filters for protection against ultraviolet radiation
1338.3	Part 3: Filters for protection against infrared radiation
3957/5852	Light-transmitting screens and curtains for welding operations

AS

1336	Recommended practices for eye protection in the industrial environment
1680	Interior lighting
1680.1	Part 1: General principles and recommendations
2812	Welding, brazing and cutting of metals — Glossary of terms

1.3 DEFINITIONS For the purpose of this Standard, the definitions below apply (see also Appendix B).

1.3.1 Cover lens—an expendable transparent cover used to protect lenses or filters (or both) against abrasion and weld spatter.

1.3.2 Erythema ultraviolet radiation—ultraviolet radiation of wavelength of less than 325 nm that elicits, after sufficient exposure, a delayed response of inflammation or reddening of the human skin.

1.3.3 Filter— an optical material used to absorb or reflect (or both) harmful radiations emitted during welding and other allied industrial operations. It may be of plastic, solid glass, laminated construction or any other suitable material.

Filters may be categorized as follows:

- (a) Filters used for arc welding, which include the following:
 - (i) Active filters — activated by electro-optical, electromechanical, or magneto-optical means.
 - (ii) Passive filters — filters having fixed transmission values.
 - (iii) Combination filters — including both an active and a passive filter.
- (b) Filters for specific welding processes, which include the following:
 - (i) Filters for arc welding.
 - (ii) Filters for gas welding.

1.3.4 Luminous density—logarithm to the base 10 of the reciprocal of the luminous transmittance.

1.3.5 Luminous transmittance—ratio of the luminous flux transmitted by the filter to the incident luminous flux.

NOTE: Luminous transmittance is usually specified with respect to one of the internationally accepted standard illuminants (see Appendix B).

1.3.6 Infra-red radiation—radiation in the wavelength range from 800 nm to 2000 nm.



SAI GLOBAL

This is a free 7 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.