

Australian Standard[®]

**Guide to the selection, care and
use of clothing for protection
against heat and fire**

This standard, prepared by Committee SF/4, Protective Clothing, was approved by the Safety Standards Board on behalf of the Council of the Standards Association of Australia on 30 April 1980, and was published on 1 July 1980.

The following scientific, industrial and governmental organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Department of Health
Australian Wool Corporation
Board of Fire Commissioners of N.S.W.
Bureau of Steel Manufacturers
CSIRO, Division of Textile Physics
Confederation of Australian Industry
Country Fire Authority
Department of Defence
Department of Industrial Relations, N.S.W.
Department of Labour and Industry, W.A.
Department of Labour and Industry, Vic.
Department of Labour Relations, Qld
Department of Productivity
Energy Authority of N.S.W.
Health Commission of N.S.W.
Health Commission of Victoria
Public Works Department, W.A.
Safety Institute of Australia
School of Public Health and Tropical Medicine, University of Sydney
Wool Textile Manufacturers of Australia

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This Standard was issued in draft form for public review as DR 78189.

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PREFACE

This standard was prepared by a subcommittee of the Association's Committee on Protective Clothing, at the request of the Safety Standards Board.

The standard sets out guidelines for the users of protective clothing intended to provide protection against heat and fire. It also lists suggested methods of protection against particular hazards, describes safety provisions, and sets out conditions for the proper maintenance of protective suits.

The protection of persons against fire hazards is not achieved simply by the wearing of protective clothing, and attention is directed to the fact that specific safeguards are necessary appropriate to the conditions of the emergency.

Although no reference is made in this standard to breathing apparatus or external provisions for body cooling by means of air-cooled suits or helmets, this standard does not preclude the use of such equipment in appropriate circumstances.

Comments received on this standard during the public review period (DR 78189) led to a committee decision to include a precaution indicating the hazards of asbestos dust where suits are made of asbestos cloth. A section for recording the maintenance and reconditioning of protective clothing was also added.

In the preparation of the standard, reference was made to the following documents:

ISO 2801 Clothing for Protection Against Heat and Fire—General
 Recommendations for Users and for Those in Charge of Such Users

BS 3791 Clothing for Protection Against Intense Heat for Short Periods

Acknowledgement is made of the assistance received from these sources.

This standard should be read in conjunction with AS , Clothing for Protection Against Intense Heat for Short Periods*.

* In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

GUIDE TO THE SELECTION, CARE AND USE OF CLOTHING FOR PROTECTION AGAINST HEAT AND FIRE

SECTION 1. SCOPE AND GENERAL CONSIDERATIONS

1.1 SCOPE. This standard sets out requirements and elementary precautions relating to the selection, use and care of clothing for protection against heat and fire. It is aimed at people without any scientific background and is intended for use as a 'Check List' by those responsible for checking safety requirements and recommendations.

This standard also includes recommendations that are valid for all clothing, according to type or kind, for protection against heat and fire.

1.2 GENERAL CONSIDERATIONS. There is no protective clothing that offers unlimited protection against heat and fire.

Many variable and interdependent factors affect the period for which protective clothing can offer protection against heat and fire, e.g. state of health of the wearer and his training, physical effort, atmospheric conditions, and air speed. For a particular garment, this period of protection may vary considerably from one wearer to another.

Furthermore, if the wearer has an accident or feels unwell, the absence of movement on his part reduces the circulation of air inside the garment and may increase the effects of the external heat.

SECTION 2. CLOTHING DESIGN AND CLOTHING ASSEMBLIES

2.1 DESIGN.

2.1.1 General. Clothing for protection against intense heat should be primarily designed to prevent heat from reaching the wearer. During exposure to intense heat, metabolic heat and any heat penetrating the clothing is stored in the body. However, it should be borne in mind that if the clothing has to be worn for any length of time before use, the wearer may well have used up a large part of the heat storage capacity of the body before entering the region of intense heat. Provision should therefore be made in the design of a garment for the loss of metabolic heat by convection and the evaporation of perspiration during this pre-entry period. This can be done by allowing the ambient air to circulate freely under the protective clothing.

Suggested methods of protection against particular hazards are listed in Table 2.1.

2.1.2 Respirable Air. Under some conditions it is desirable that a protective suit be as airtight as possible, and therefore the helmet or its visor or faceshield must be provided with ventilation openings which allow the wearer to breathe but which are capable of being quickly and easily closed where necessary. To ensure that there is always a reserve of fresh air when the ventilation openings are closed, the exhaled air should not be retained within the suit.

In the design of helmet and suit, care should be taken to ensure that when they are in use there is sufficient air available in the helmet and suit to meet the respiration requirements of the wearer for the exposure period.

2.1.3 Weight and Fit. If protective clothing is used for short periods and is donned immediately before use, its mass will not usually be an important factor, but where it is to be worn for long periods its mass should be as low as possible. Heavy clothing will increase the probability of collapse through exhaustion of the wearer.

Care should be taken to ensure that body and limb movements are not hampered and that the protective clothing is not tight fitting. It should be made of flexible fabric and should be designed to provide for —

- (a) correct fitting;
- (b) ease and speed of donning and removal; and
- (c) comfort during wearing.