

Australian Standard™

**Underground mining—
Shaft equipment**

Part 5: Headframes

This Australian Standard was prepared by Committee ME/18, Mining Equipment. It was approved on behalf of the Council of Standards Australia on 10 July 1998 and published on 5 October 1998.

The following interests are represented on Committee ME/18:

Australasian Institute of Mining and Metallurgy
Australian Chamber of Commerce and Industry
Australian Coal Association
Bureau of Steel Manufacturers of Australia
Chamber of Minerals and Energy of Western Australia
Department of Mineral Resources, New South Wales
Department of Minerals and Energy, Western Australia
Department of Mines and Energy, Queensland
Department of Natural Resources and Environment, Victoria
Institution of Engineers, Australia
Institution of Mining Engineers
Minerals Council of Australia
Ministry of Commerce, New Zealand
South Australian Chamber of Mines and Energy
Testing Interests (Australia)
Workplace Standards Authority, Tasmania

Review of Australian Standards. To keep abreast of progress in industry, Australian 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 Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

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

This Standard was issued in draft form for comment as DR 95456.

AS 3785.5—1998

Australian Standard™

**Underground mining—
Shaft equipment**

Part 5: Headframes

Originated as AS 3785.5—1991.
Second edition—1998.

Published by Standards Australia
(Standards Association of Australia)
1 The Crescent, Homebush, NSW 2140

ISBN 0 7337 2178 8

PREFACE

This Standard was prepared by the Standard Australia Committee ME/18, Mining Equipment, to supersede AS 3785.5—1991.

The Standard is one of the following series, which deals with mine shaft equipment and promotes the safety of shaft equipment in underground mines:

AS

- 3785 Underground mining—Shaft equipment
- 3785.1 Part 1: Drum winding overwind safety catch systems
- 3785.2 Part 2: Friction winding arresting systems
- 3785.3 Part 3: Drum winding gripper systems
- 3785.4 Part 4: Conveyances for vertical shafts
- 3785.5 Part 5: Headframes (this Standard)
- 3785.6 Part 6: Guides and rubbing ropes for conveyances
- 3785.7 Part 7: Sheaves
- 3785.8 Part 8: Personnel conveyances in other than vertical shafts

Significant changes from the previous edition include the deletion of the definition for 'special load' and amendments to the following Clauses:

- 1.2 Referenced documents
- 2.2.1 Self-weight loads
- 2.3.7 Bin and chute loads
- 2.4.2 Operating rope loads
- 2.6 Wind loads
- 2.7 Earthquake loads
- 3.1 Structural design
- 3.2 Partial load factors
- 3.3 Load combinations
- 3.4 Stiffness
- 3.6 Stability.

© Copyright — STANDARDS AUSTRALIA

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

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

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no 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 at any time.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 REFERENCED DOCUMENTS	4
1.3 DEFINITIONS	4
1.4 NOTATION	7
SECTION 2 LOAD CALCULATIONS	
2.1 GENERAL	9
2.2 DEAD LOADS (W_{DL})	9
2.3 LIVE LOADS (W_L)	10
2.4 WORKING LOADS (W_{wk})	10
2.5 EMERGENCY LOADS (W_{em})	11
2.6 WIND LOADS (W_w)	12
2.7 EARTHQUAKE LOADS (W_{EQ})	12
2.8 FOOTING SETTLEMENT LOADS (W_{ftg})	12
2.9 TEMPERATURE EFFECT LOADS (W_{temp})	12
SECTION 3 DESIGN	
3.1 STRUCTURAL DESIGN	14
3.2 PARTIAL LOAD FACTORS	14
3.3 LOAD COMBINATIONS	14
3.4 STIFFNESS	16
3.5 VIBRATION	16
3.6 STABILITY	16
3.7 PLATFORM AND ACCESS REQUIREMENTS	16
3.8 FOOTING SETTLEMENT	16
3.9 TEMPERATURE EFFECTS	16

STANDARDS AUSTRALIA

Australian Standard
Underground mining—Shaft equipment

Part 5: Headframes

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies design requirements for headframes and skyshafts, for use on mine winding installations.

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

AS

- 1170 Minimum design loads on structures (known as the SAA Loading Code)
- 1170.1 Part 1: Dead and live loads and load combinations
- 1170.2 Part 2: Wind loads
- 1170.4 Part 4: Earthquake loads

- 1418 Cranes (including hoists and winches)
- 1418.1 Part 1: General requirements

- 1657 Fixed platforms, walkways, stairways and ladders—Design, construction and installation

- 1720 Timber structures
- 1720.1 Part 1: Design methods

- 2670 Evaluation of human exposure to whole-body vibration
- 2670.1 Part 1: General requirements
- 2670.2 Part 2: Continuous and shock-induced vibration in buildings (1 to 80 Hz)
- 2670.3 Part 3: Evaluation of exposure to whole-body Z-axis vertical vibration in the frequency range 0.1 to 0.63 Hz

- 3600 Concrete structures

- 3785 Underground mining—Shaft equipment
- 3785.6 Part 6: Guides and rubbing ropes for conveyances

- 3990 Mechanical equipment—Steelwork

- 4100 Steel structures

AS/NZS

- 1664 Aluminium Structures
- 1664.1 Limit state design
- 1664.2 Allowable stress design

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

1.3.1 Arresting distance—the distance between the point of entry and the point of impact.

1.3.2 Arrestor anchor—the anchor that fixes an arrestor to a headframe or skyshaft.