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Australian Standard 1252—1983

HIGH-STRENGTH STEEL BOLTS WITH ASSOCIATED NUTS AND WASHERS FOR STRUCTURAL ENGINEERING

STANDARDS ASSOCIATION OF AUSTRALIA
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The following interests were represented on the committee responsible for the preparation of this standard:

Australian Institute of Steel Construction Ltd

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Defence

Electricity Supply Association of Australia

Fasteners Institute of Australia

Federal Chamber of Automotive Industries

Institution of Production Engineers

Metal Trades Industry Association of Australia

Petroleum Refinery Engineers Advisory Committee

Railways of Australia Committee

Society of Automotive Engineers—Australasia

Telecom Australia

Tractor and Machinery Association of Australia

University of Sydney

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AUSTRALIAN STANDARD

HIGH-STRENGTH STEEL BOLTS
WITH ASSOCIATED NUTS AND WASHERS FOR STRUCTURAL ENGINEERING

AS 1252—1983

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PREFACE

This edition of this standard was prepared by the Association's Committee on Fasteners to supersede AS 1252—1973, General Grade High-strength Steel Bolts with Associated Nuts and Washers for Structural Engineering. At its time of issue in 1973, the first edition was in complete alignment with all relevant ISO documentation which, however, consisted only of a series of basic recommendations covering such things as head sizes, bolt diameters, nominal lengths, mechanical properties, etc.

Since that time ISO/TC 2 has been quite active in preparing standards on these types of products, and a working group, ISO/TC 2/WG 9, was formed with Australia as Secretariat. This working group has recently completed a series of draft International standards, which are currently being balloted for acceptance as International standards.

Because of the different practices used for bolting for steel structures in different countries or regions, it was found necessary to prepare some five International standards to cover all requirements. It was recognized that each individual country would select only such standards as were required for their purposes. Attention is drawn to Appendix A for further information. The complete range of ISO standards is as follows:

ISO/DIS 4775	High Strength Structural Nuts —Product Grade B
ISO/DIS 7411	High Strength Structural Bolts —Thread Lengths According to ISO 888
ISO/DIS 7412	High Strength Structural Bolts —Short Thread Length Type
ISO/DIS 7415	Hardened and Tempered Plain Hole Circular Washers for High Strength Structural Bolts
ISO/DIS 7416	Hardened and Tempered Chamfered Hole Circular Washers for High Strength Structural Bolts

The draft International standards incorporate the new heavy metric hexagon sizes as given in ISO 272—1979. The most significant change is for M20 diameter bolts and nuts, where the hexagon across—flats size has been changed from 32 mm to 34 mm. The draft International standards also feature slightly thinner nuts than those currently given in AS 1252—1973. These nuts have been theoretically designed and as yet have not been proved in practice.

The committee gave serious consideration as to whether these changes should be incorporated in this edition of AS 1252. It is significant to note that finalizing the ISO standards and their subsequent adoption by major industrial countries will take some 3 to 5 years and therefore it would be premature to incorporate these changes at this time. It was agreed by the committee that the current hexagon size for M20 diameter bolts and nuts, and also the current nut heights would be retained in this edition, and the situation would be reviewed following the publication of the ISO standards and their adoption by major industrial countries. However, Appendix H gives for information details of the relevant dimensions for the new 34 mm across-flats size for M20 diameter bolts and nuts as incorporated in the draft International standards.

It was further agreed by the committee that there was sufficient international agreement to warrant a new edition of this standard and take into account the concepts given in the draft International standards. This would be coupled with the committee's policy to rationalize the types and varieties which would ensure the best economic benefit to Australian industry. This standard therefore covers only high-strength structural bolts with normal (ISO 888) thread lengths of property class 8.8, and high-strength structural nuts of property class 8. These are functionally the same as those given in the respective ISO standards shown below. The other differences are minor and are in the thread run-out, marking and designation requirements. In the International standards, in order to align with the ISO property class designation system given in ISO 898, structural bolts and associated nuts are required to be marked 8.8S and 8S respectively, but in the context of an Australian standard it was noted by the committee that the current marking provisions given in AS 1252—1973 were well entrenched in the construction industry and no useful purpose would be served by changing the marking to incorporate the ISO system. Consequently the marking system as given in the 1973 edition of AS 1252 has been changed only marginally in that the symbol M has been replaced by the numeral(s) denoting the property class.* The committee also noted that there was a growing requirement for short thread length bolts, but currently there was insufficient usage to warrant their inclusion in the standard. To assist users who require such bolts, the thread run-out was reduced from $4.5p$ (as given in the ISO standard) to $3p$, which should alleviate the problem to some degree. Furthermore, an appendix has been added giving further information on ISO short thread length bolts.

Other changes from the 1973 edition are as follows:

(a) A slight upgrading of the mechanical properties of bolts.

(b) A similar upgrading in the nut proof load stress.

(c) The introduction of the unthreaded shank length (l_s) and the bolt grip length (l_g) concept which should assist designers of steel structures.

(d) The relegation of square tapered washers to an appendix because of their diminishing use.

(e) The introduction of M22 bolts, nuts and washers as part of the non-preferred series to recognize a requirement in the construction industry.

(f) The relegation of M12 bolts, nuts and washers to the non-preferred series because of their small use in the construction industry.

Bolts and nuts to the 1973 edition will gradually be phased out, but during the transition period either type may be supplied as being functionally equivalent.

As indicated previously, with the above exceptions, this standard is in alignment with, and is based on ISO/DIS 4775, ISO/DIS 7411 and ISO/DIS 7415.

*Thus AS 1252 property classes 8.8 and 8 for bolts and nuts respectively, align with the requirements for ISO property classes 8.8S and 8S.

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