AS 3774 Supplement 1—1997

Loads on bulk solids containers—Commentary

(Supplement 1 to AS 3774—1996)

This Australian Standard was prepared by Committee BD/65, Loads on Bulk Solids Containers. It was approved on behalf of the Council of Standards Australia on 31 October 1997 and published on 5 December 1997.

The following interests are represented on Committee BD/65:

CSIRO, Division of Building, Construction and Engineering

Institution of Engineers Australia

Swinburne University of Technology

University of Melbourne

University of Sydney

University of Wollongong

This Standard was issued in draft form for comment as DR 96535.

AS 3774 Supplement 1—1997

Loads on bulk solids containers—Commentary

(Supplement 1 to AS 3774—1996)

Originated as AS 3774 Supplement 1— 1990.
Second edition 1997.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7337 1637 7

PREFACE

This Supplement was prepared by the Standards Australia Committee BD/65, Loads on Bulk Solids Containers, as a commentary on AS 3774—1996, *Loads on bulk solids containers*.

This new edition of the Supplement incorporates several corrections and amendments to the previous edition. These include changes to Paragraphs C6.2.3.3 and C7.4.

The Supplement provides background information on the Standard, guidance on its use and suggestions on good practice.

The paragraphs in this Commentary refer directly to the respective clauses in the Standard, e.g. Paragraph C5.3.1 refers to Clause 5.3.1. Where there is no commentary to a clause of the Standard or to a complete section, the appropriate number and title of the clause or section do not appear. References are listed as the last item of the section or appendix in which they occur.

CONTENTS

Page

STANDARDS AUSTRALIA

Australian Standard

Loads on bulk solids containers—Commentary

SECTION C4 LOAD CLASSIFICATION, LOAD COMBINATIONS, AND LOAD FACTORS

C4.1 GENERAL The main purpose of the load classification is to enable easy reference to various load types. The load types enumerated in Table 4.1 are typical in this class of structure, but each structure should be individually treated and any additional load types considered.

C4.2 LOAD COMBINATIONS Each element of the structure should be designed for loads and load combinations appropriate to its function. Upper and lower characteristic values of loads should be applied to each structural element in considering its limit state of strength and serviceability.

The probability of all loads in a load combination acting at their upper characteristic values should be considered in view of the fact that all loads are randomly variable. In the absence of routine methods for statistical probabilistic analysis, Section 4 gives general guidance for combining loads.

Special care is needed to identify structural elements which are prone to strength reduction when one or more load types in the load combinations drop to their lower characteristic values. Typical examples are—

(a) walls of cylindrical containers under axial loads when the lateral pressure from the bulk solid is taken into consideration in the buckling analysis; and

(b) anchor bolts under uplift loads due to environmental loads.

C4.3 LOAD FACTORS Two sets of load factors are specified: one set for strength design and another for serviceability design.

The values of load factors given in Clause 4.3 reflect the probabilistic concepts of the ultimate limit states codes in that they vary in accordance with the classes of loads included in each particular load combination. Since it is impossible to cover every conceivable load combination in a wide variety of containers, the designer should carefully investigate all special conditions that may arise and apply appropriate values of load factors.