

Australian Standard[®]

**Aggregates and rock for engineering
purposes**

**Part 6: Guidelines for the specification
of armourstone**



This Australian Standard® was prepared by Committee CE-012, Aggregates and Rock for Engineering Purposes. It was approved on behalf of the Council of Standards Australia on 10 April 2008.

This Standard was published on 30 June 2008.

The following are represented on Committee CE-012:

- ARB Group Ltd
 - AUSTROADS
 - Australasian Railway Association
 - Australasian Slag Association
 - Australian Asphalt Pavement Association
 - Australian Chamber of Commerce and Industry
 - Bureau of Steel Manufacturers of Australia
 - Cement Concrete and Aggregates Australia
 - Engineering and Construction Laboratories Association
 - Institute of Quarrying Australia
 - National Association of Testing Authorities Australia
-

This Standard was issued in draft form for comment as DR 06727.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

**Aggregates and rock for engineering
purposes**

**Part 6: Guidelines for the specification
of armourstone**

First published as AS 2758.6—2008.
Reissued incorporating Amendment No. 1 (March 2009).

COPYRIGHT

© Standards Australia

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia
ISBN 0 7337 8813 0

PREFACE

This Standard was prepared by the Standards Australia Committee CE-012, Aggregates and Rock for Engineering Purposes.

This Standard incorporates Amendment No. 1 (March 2009). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

This Standard is part of a series that covers specification of aggregates and rock, as follows:

- 2758 Aggregates and rocks for engineering purposes
- 2758.1 Part 1: Concrete aggregates
- 2758.2 Part 2: Aggregate for sprayed bituminous surfacing
- 2758.4 Part 4: Aggregate for gabion baskets and wire mattresses
- 2758.5 Part 5: Asphalt aggregates
- A1 | 2758.6 Part 6: Guidelines for the specification of armourstone
- 2758.7 Part 7: Railway ballast

This Standard is a guideline document and is intended to be informative only.

CONTENTS

	<i>Page</i>
1 SCOPE.....	4
2 APPLICATION	4
3 REFERENCED DOCUMENTS.....	4
4 DEFINITIONS.....	5
5 RESOURCE AVAILABILITY	5
6 DESIGN CONSIDERATIONS	6
7 EXPOSURE RISK CLASSIFICATION	6
8 RESOURCE INVESTIGATION.....	7
9 MATERIAL REQUIREMENTS.....	9
 APPENDICES	
A MASS TO DIMENSION CONVERSION FOR BOULDERS	15
B COMMON DEFECTS IN ROCK MASS	31

STANDARDS AUSTRALIA**Australian Standard****Aggregates and rock for engineering purposes****Part 6: Guidelines for the specification of armourstone****1 SCOPE**

This Standard provides designers and specifiers with a basis for developing the criteria for selection of natural, boulder-sized rock materials for use as armourstone on sea walls, harbour and river foreshores or dam walls. Armourstone boulders range from several kilograms up to many tonnes in mass. Dimensions of the armourstone may be the defining design requirement.

2 APPLICATION

These guidelines may form the basis of a works specification but cannot be used as a specification in themselves. The designer or specifier is presented with a series of considerations and alternative criteria from which to structure a project specification; however, the criteria are deliberately conservative and may not be cost effective in some instances. The designer is in the position to determine whether criteria suggested apply to the project under consideration and whether the project environment would allow relaxation of suggested criteria.

The selection of test procedures and test limits will be determined by the design philosophy and the design life of the completed structure. For the purposes of these guidelines a design life of 40 years has been assumed. For many structures, where replacement of materials is practical, much shorter design life cycles may be appropriate and lesser criteria may be successfully applied to the armourstone. For structures such as dams, a much longer design life may be required and the criteria will need to be adjusted accordingly.

The works specification should specify all the tests and the limits appropriate to the design application; however a distinction may be made between those requirements used for selection and evaluation of the source material and those requirements used for quality control of product during the execution of a supply contract. It may not be necessary to apply the full range of tests during the execution of the contract. The frequency of testing should be detailed in the works specification.

For legal purposes, only the works specification is binding and this document has no legal significance for contract purposes.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1141	Methods for sampling and testing aggregates
1141.1	Definitions
1141.2	Method 2: Basic testing equipment
1141.3.2	Method 3.2: Sampling—Rock spalls, boulders and drill core
1141.6.1	Method 6.1: Particle density and water absorption of coarse aggregate— Weighing-in-water method
1141.22	Method 22: Wet/dry strength variation