AS 2628—2010

Australian Standard®

Sealed grain-storage silos—Sealing requirements for insect control

This Australian Standard® was prepared by Committee BD-102, Silos—Grain Storage. It was approved on behalf of the Council of Standards Australia on 14 December 2009.
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The following are represented on Committee BD-102:

- Australian Silo Manufacturers and Grain Storage Association
- CSIRO Entomology
- Department of Primary Industries and Fisheries Queensland
- National Farmers Federation
- Victorian Farmers Federation

Additional Interests:

- Mr Peter Botta

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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.

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PREFACE

This Standard was prepared by the Standards Australia Committee BD-102, Silos—Grain Storage.

The objective of this Standard is to specify sealing requirements for sealed grain-storage silos, in which fumigation and controlled atmosphere treatments are conducted for the control of insects.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

CONTENTS

FOREWORD

Phosphine fumigation is commonly used to control insect pests in grain. The grains industry should retain this product in order to deliver insect and residue-free grain. Alternatives to phosphine are more expensive, more difficult to use, and some are less acceptable to markets.

The future availability and effectiveness of phosphine as a grain treatment is under threat on two fronts:

(a) Insect resistance to phosphine is being found more frequently—all stages of the resistant insects can survive fumigation in unsealed silos.

(b) If phosphine's good-safety record is not upheld, it could be withdrawn for some uses, including on-farm use.

The continued use of phosphine is vital to growers and others in the grains industry. It is the fumigation treatment preferred by most markets and no other treatment has as cost effective and easy to apply; however, insects resistant to phosphine are being found with increasing frequency. Using phosphine in unsealed silos will not kill all insects and will only lead to further selection of resistant insect strains. The use of sealed silos for effective fumigation is a key issue if phosphine is to be kept as a useful and active product in the long term.

Fumigation in a sealed silo passing a pressure test keeps the phosphine concentration high for long enough to control all known resistant insects.

A silo sealed to the standards required of phosphine treatment has the additional advantages that it may help protect fumigated grain from reinfestation and that it is available for treatment by carbon dioxide as used for "organic grain".

Where air inflow is incorporated (aeration) for grain conditioning during storage, a screen mesh should be used on air inlets and outlets to retain the integrity of the silos' insect-proof seal.

STANDARDS AUSTRALIA

Australian Standard
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S E C T I O N 1 S C O P E A N D G E N E R A L

1.1 SCOPE

This Standard specifies structural, sealing, and maintenance requirements for sealed grain-storage silos in which phosphine fumigation is conducted for the control of insects.

NOTES:

1 The sealing requirements given in this Standard may also be applicable for the control of insects using other fumigants or controlled atmosphere, e.g., CO_2.

2 For further information on general fumigation procedures, refer to AS 2476.

1.2 APPLICATION

This Standard is intended for application in the design, manufacture, purchase, operation, and maintenance of sealed grain-storage silos.

1.3 DEFINITIONS

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

1.3.1 Phosphine fumigation

A treatment in sealed silos using aluminium phosphide, which is commonly used to control insects in grain.

1.3.2 Sealed silo

A grain-storage silo that meets the sealing requirements, that is gas-tight, specified in this Standard for the purpose of fumigation.

NOTE: A sealed silo may be opened for aeration or ventilation, or both.

1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
2476 General fumigation procedures

3774 Loads on bulk solids containers

WorkCover
Code of practice in the design of bulk solids containers including silos, field bins and chaser bins, 2005

1.5 GENERAL REQUIREMENTS

All sealed silos, for the purpose of insect control using phosphine fumigation, shall meet—

(a) the structural requirements specified in Section 2;

(b) the sealing requirements specified in Section 3, when tested in accordance with Appendix A;