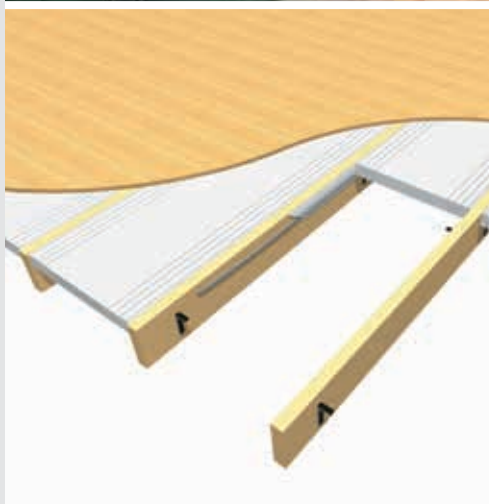


New Zealand Standard

Energy efficiency – Installing bulk thermal insulation in residential buildings

Superseding NZS 4246:2006

NZS 4246:2016



COMMITTEE REPRESENTATION

This standard was prepared by the P4246 Committee. The membership of the committee was approved by the New Zealand Standards Approval Board and appointed by the New Zealand Standards Executive under the Standards and Accreditation Act 2015.

The committee consisted of representatives of the following nominating organisations:

BRANZ Ltd

Energy Efficiency and Conservation Authority

Insulation Association of New Zealand

Lighting Council New Zealand

Ministry of Business, Innovation and Employment – Building System Performance

National Association of Steel Framed Housing

New Zealand Certified Builders Association

Opus International Consultants

Registered Master Builders Association

WorkSafe New Zealand

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AMENDMENTS

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NOTES

CONTENTS

Committee representation	IFC
Acknowledgements.....	IFC
Copyright.....	IFC
Referenced documents.....	vii
Latest revisions	ix
Review of standards.....	ix
Foreword	x
Outcome statement.....	x
Section	
1 INTRODUCTION	3
1.1 Scope.....	3
1.2 Interpretation.....	4
1.3 Definitions	5
2 SPECIAL CONSIDERATIONS.....	13
2.1 General.....	13
2.2 New Zealand Building Code compliance	13
2.3 Building consent	15
2.4 Effect of poor insulation installation on thermal performance.....	15
2.5 Effect of insulation compression on thermal performance.....	16
2.6 Storage and transport.....	16
2.7 Labelling on site	16
2.8 Health and safety	17
2.9 Managing electrical safety risks presented by foil insulation.....	17
2.10 Avoiding excessive insulation clearances	17
3 ELECTRICAL.....	21
3.1 General.....	21
3.2 Clearances for built-in appliances or enclosures containing electrical equipment	21
3.3 New buildings.....	21
3.4 Existing buildings.....	22
3.5 Avoiding contact between cables and polystyrene insulation.....	22
4 LIGHTING	25
4.1 General.....	25
4.2 Installing insulation near recessed luminaires.....	25
4.3 Installing insulation near surface-mounted luminaires.....	40
4.4 Installing insulation near independent controlgear in ceilings.....	43
4.5 Installing insulation near independent controlgear in subfloor spaces	45
4.6 Installing insulation near fan/heat/light units.....	46



5	WALLS	49
	5.1 General.....	49
	5.2 Special considerations	49
	5.3 Timber/steel-framed walls with wall underlay	53
	5.4 Timber/steel-framed walls without wall underlay	57
	5.5 Loose-fill wall insulation.....	61
	5.6 Masonry walls	63
6	CEILINGS AND ROOFS.....	67
	6.1 General	67
	6.2 Special considerations	67
	6.3 Segments and blankets insulation – unlined ceilings.....	78
	6.4 Segments and blankets insulation – lined ceilings.....	81
	6.5 Rigid sheet insulation – unlined and lined ceilings.....	85
	6.6 Loose-fill insulation – lined ceilings	86
7	UNDERFLOOR – SUSPENDED FRAMED FLOORS.....	91
	7.1 General.....	91
	7.2 Special considerations	91
	7.3 Blanket underfloor insulation	93
	7.4 Rigid sheet underfloor insulation.....	95
	7.5 Semi-rigid underfloor insulation	97
8	ON-GROUND VAPOUR BARRIERS	103
	8.1 Special considerations	103
	8.2 Installing an on-ground vapour barrier	104
9	PIPE INSULATION AND CYLINDER WRAPS	109
	9.1 General.....	109
	9.2 Pipe insulation.....	109
	9.3 Hot water cylinder wraps	110
10	CONCRETE SLAB-ON-GROUND INSULATION.....	115
	10.1 Special considerations	115
	10.2 Under-slab insulation.....	116
	10.3 Slab perimeter insulation	117
Appendix		
A	Clearances (Normative)	121
B	Health and safety (Informative).....	126
C	Warning sign (Informative)	145
D	Climate zones (Informative)	146

Figure

1	Insulation installed with gaps, tucks and folds	15
2	Installing ceiling insulation around recessed luminaires of the type CA 80, CA 90, and CA 135 where the luminaire manufacturer's instructions are not known	36
3	Installing ceiling insulation around recessed luminaires of the type CA 80, CA 90, and CA 135 where the luminaire manufacturer's instructions are not known (ceilings with existing loose-fill insulation).....	36
4	Installing new loose-fill ceiling insulation around recessed luminaires of the type CA 80, CA 90, and CA 135 where the luminaire manufacturer's instructions are not known.....	37
5	Installing ceiling insulation around recessed luminaires of the type IC, IC-F, and IC-4 where the luminaire manufacturer's instructions are not known.....	37
6	Installing ceiling insulation around recessed luminaires of the type IC, IC-F, and IC-4 where the luminaire manufacturer's instructions are not known (ceilings with existing loose-fill insulation)	38
7	Installing new loose-fill ceiling insulation around recessed luminaires of the type IC, IC-F, and IC-4 where the luminaire manufacturer's instructions are not known	38
8	Installing ceiling insulation around recessed luminaires that are NOT of the type CA 80, CA 90, CA 135, IC, IC-F, or IC-4 where insulation is NOT secured in position or where insulation is loose-fill and where the luminaire manufacturer's instructions are not known	39
9	Installing ceiling insulation around recessed luminaires that are NOT of the type CA 80, CA 90, CA 135, IC, IC-F, or IC-4 where insulation is secured in position and where the luminaire manufacturer's instructions are not known.....	39
10	Example of underfloor insulation installed with clearance around a light fitting mounted to the bottom of a floor joist	42
11	Example of underfloor insulation installed with clearance around a light fitting mounted to the bottom of a floor joist	42
12	Example of underfloor insulation installed with clearance around a light fitting mounted to the side of a floor joist	42
13	Example of ceiling insulation installed with clearance around a light fitting mounted to the top of a ceiling joist	43
14	Example of ceiling insulation clearance around a recessed luminaire and independent controlgear not placed on top of insulation.....	44
15	Example of ceiling insulation clearance around independent controlgear not placed on top of insulation, where the manufacturer's instructions are not known	45
16	Insulation fitted into a steel-framed wall	55
17	Stapling blanket	55
18	Retrofitting wall underlay	57
19	Installing strapping horizontally	59
20	Steel-framed truss roof	70
21	Steel-framed skillion roof	70



22	Roof detail for a low-pitch roof	74
23	Skillion roof with metal tile cladding	74
24	Low-pitch roof with metal tiles	75
25	Profiled metal roof	75
26	Metal tile roof	76
27	Segments installed in a ceiling	79
28	Blanket in a ceiling secured with strapping	81
29	Friction-fitting insulation over joists	83
30	Installed underfloor blanket	95
31	Installation of underfloor rigid sheet floor insulation	96
32	Fitting semi-rigid sheets	98
33	On-ground vapour barrier folded up along foundation walls and overlapped along joints	105
34	On-ground vapour barrier folded up and taped around a pile	105
35	Insulated hot water cylinder	111
36	Under-slab insulation	115
37	Slab perimeter insulation	118
B1	Typical personal protective equipment (PPE)	131
C1	Warning sign	145
D1	New Zealand climate zones	146

Table

1	Installing ceiling insulation where recessed luminaires are already in place and where the luminaire manufacturer's instructions are not known	27
A1	Clearances in the ceiling	121
A2	Clearances in the underfloor space	125
B1	Basic list of gear for insulation installers	129
B2	Installer's personal protective equipment	129
B3	General installation health and safety risks	132
B4	Ceiling installation health and safety hazards	137
B5	Underfloor installation health and safety hazards	139
B6	Installing underfloor insulation with power ON	142
B7	Installing underfloor insulation with power OFF	142
B8	Hot water cylinder health and safety precautions	144

REFERENCED DOCUMENTS

Reference is made in this document to the following:

New Zealand standards

NZS 3604:2011	Timber-framed buildings
NZS 4218:2009	Energy efficiency – Housing and small buildings
NZS 4305:1996	Energy efficiency – Domestic type hot water systems

Joint Australian/New Zealand standards

AS/NZS 1715:2009	Selection, use and maintenance of respiratory protective equipment
AS/NZS 1716:2012	Respiratory protective devices
AS/NZS 2918:2001	Domestic solid fuel burning appliances – Installation
AS/NZS 3760:2010	In-service safety inspection and testing of electrical equipment
AS/NZS 4859:- - -	Materials for the thermal insulation of buildings
Part 1:2002	General criteria and technical provisions
AS/NZS 5110:2011	Recessed luminaire barriers
AS/NZS 5601:- - -	Gas installations
Part.1:2010	General installations
AS/NZS 60598:- - -	Luminaires
Part.2.2:2001	Particular requirements – Recessed luminaires (Incorporating New Zealand-only Amendment A)
AS/NZS 60598:- - -	Luminaires
Part 2.2:2016	Particular requirements – Recessed luminaires
AS/NZS 60695:- - -	Fire hazard testing
Part 11.5:2005	Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance

International standards

ISO 5660:- - -	Reaction-to-fire tests – Heat release, smoke production and mass loss rate
Part 1:2002	Heat release rate (cone calorimeter method)

Australian standards

AS 1366 (series)	Rigid cellular plastics sheets for thermal insulation
AS 1691:1985	Domestic oil-fired appliances – Installation
AS 1530:- - - -	Methods for fire tests on building materials, components and structures
Part 1:1994	Combustibility test for materials

Other publications

NZCEP 55:2016	New Zealand electrical code of practice for managing electrical risks associated with electrically conductive thermal insulation (Retrieved on 12 August 2016 from www.energysafety.govt.nz/documents/legislation-policy/electricity-act-regulations-codes/standards-and-codes-of-practice/nzcep-55-july-2016.pdf)
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New Zealand legislation

Building Act 2004
Building Regulations 1992 (New Zealand Building Code (NZBC))
Electricity Act 1992
Electricity (Safety) Regulations 2010
Health and Safety at Work Act 2015
Health and Safety at Work (Asbestos) Regulations 2016
Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016

Websites

www.business.govt.nz/worksafe/hswa
www.business.govt.nz/worksafe/information-guidance/guidance-by-hazard-type/asbestos/working-with-asbestos/tools-and-resources
www.branz.co.nz/appraisals
www.ewrb.govt.nz
www.iaonz.co.nz
www.legislation.govt.nz
www.lightingcouncil.org.nz

LATEST REVISIONS

The users of this standard should ensure that their copies of the above-mentioned New Zealand standards are the latest revisions. Amendments to referenced New Zealand and joint Australian/New Zealand standards can be found on www.standards.govt.nz.

REVIEW OF STANDARDS

Suggestions for improvement of this standard will be welcomed. They should be sent to the New Zealand Standards Executive, Standards New Zealand, PO Box 1473, Wellington 6140.

FOREWORD

New Zealanders are aware of the critical role thermal insulation plays in creating living environments that are healthy and comfortable for occupants and that are affordable to heat.

Energy efficient building design, and the use of quality insulation products are important, but thermal insulation can only perform effectively, and thereby meet any relevant building code and other regulatory requirements or building specifications, if it is installed correctly. Incorrectly installing insulation can compromise the durability of the building and put the health and safety of installers and occupants of the building at serious risk.

This standard supports the installation of insulation by professional and DIY installers to ensure good thermal performance without compromising durability or health and safety. On-ground vapour barriers have been included as a means of protecting and enhancing the performance of insulation products, even though they are not, in themselves, insulation products.

The installation of foil insulation continues to be excluded from the scope of this revised standard and the installation or repair of foil insulation in residential buildings with existing electrical installations is now banned under the Building Act, section 26. The retrofitting of foil insulation in rental properties is also not permitted under the Residential Tenancies (Smoke Alarms and Insulation) Regulations.

Previous versions of this standard have set the standard for installing insulation and have contributed to the success of the New Zealand Government's insulation retrofit programmes for residential buildings. This updated version of the standard also provides recommendations for new construction where poor insulation installation is still all too common.

This revised 2016 standard has been restructured for improved readability and has been updated and extended to provide guidance on installing insulation in steel-framed constructions and for concrete slabs on ground. Additional diagrams, photos, and figures have been included for illustrative purposes.

This standard is presented in sections and has been developed with the intention that each section can be read as a stand-alone set of guidance principles, with reference to other sections as required. As such, there is some repetition between the sections to ensure that no details are overlooked.

OUTCOME STATEMENT

NZS 4246:2016 *Energy efficiency – Installing bulk thermal insulation in residential buildings* provides guidance for the correct installation of quality insulation products by installers and consumers to achieve the intended thermal performance in buildings without compromising the durability and safety of insulation or building elements and the health and safety of installers and building occupants.

SECTION 1

INTRODUCTION

- 1.1 Scope
- 1.2 Interpretation
- 1.3 Definitions

New Zealand Standard

Energy efficiency – Installing bulk thermal insulation in residential buildings

1 INTRODUCTION

1.1 Scope

1.1.1 Inclusions

This standard outlines methods of installing insulation products in common residential light-timber and steel-framed construction types. Information on the safe installation (clearances, health and safety) of insulating materials is appended.


The detail in the standard is based on residential-type construction, but the methods may be appropriate to other constructions.

The standard covers both the installing of insulation in new buildings during construction and the retrofitting of insulation in existing buildings.

On-ground vapour barriers have been included although they are not, in themselves, insulation products, because reducing the migration of water vapour into the subfloor space helps keep indoor air drier, reducing condensation and the growth of mould and mildew, which helps maintain a healthy living environment in buildings.

The following product types and applications are covered by this standard:

- (a) Loose-fill product (such as wool, mineral wool, or cellulose fibre) for insulating walls and ceilings;
- (b) Segment and blanket products (such as polyester, wool or mineral wool) for insulating walls, ceilings, and floors;
- (c) Rigid sheet insulation products (such as expanded or extruded polystyrene (EPS or XPS) and polyisocyanurate (PIR) for insulating walls, ceilings, and floors;
- (d) Semi-rigid insulation (such as wool, mineral wool, polyester) for insulating walls, ceilings, and floors;
- (e) Pipe insulation (such as pre-formed tubular foam);
- (f) Hot water cylinder wraps (such as wool, mineral wool, or polyester blanket with cloth or foil-backing);
- (g) On-ground vapour barriers.

Thermal breaks for steel-framed constructions are referenced in this standard but not covered in detail. 

Included in this standard is advice about the safe and effective installation of insulation around recessed luminaires. This information is limited to situations where the luminaires are already in place before the insulation is installed and therefore does not provide guidance to registered electricians when installing or replacing luminaires in ceilings that are already insulated.

1.1.2 Exclusions

This standard excludes installation of:

- (a) Structural elements of buildings that provide inherent thermal resistance;
- (b) Insulation in buildings with specific design, including freezers or cool stores;
- (c) Insulation in buildings where insulation is part of the cladding material, such as exterior insulation and finish systems (EIFS);
- (d) Insulation for purposes other than for thermal benefit, such as acoustic;
- (e) Vapour barriers where these may be required in building elements around areas such as spa pools, swimming pools, or mountain lodges;
- (f) Passive thermal design;
- (g) Pre-assembled insulating systems;
- (h) Double glazing (for further information on glazing and R-values, refer to NZS 4218);
- (i) Expanding *in situ* foams;
- (j) Radiant barriers in walls and ceilings;
- (k) Foil insulation;
- (l) Insulation in ventilation cavities of walls, including brick veneer cavities;
- (m) Insulation in the cavity of double brick walls.

1.2 Interpretation

Clauses in this standard prescribe practices that are essential for compliance with this standard, except where:

- (a) The word 'should' refers to practices that are advised or recommended;
- (b) Clauses are prefixed 'C' and printed in italic type. These are intended as comments on the corresponding clauses. They are not to be taken as the only or complete interpretation. The standard can be complied with if the comment is ignored.

Clauses prefixed by 'NOTE' are intended as comments on the corresponding essential clauses. They are not to be taken as the only or complete interpretation of the corresponding clause nor should they be used for determining in any way the essential requirements of compliance within this standard.

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 while an 'informative' appendix is only for information and guidance.



NZS 4246:2016 Energy efficiency - Installing bulk thermal insulation in residential buildings

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