



MAKING SPACES INTO **SAFE** PLACES

Fire Resistance Requirements Guide - Flooring

creating better environments



FLOORING SYSTEMS

FIRE RESISTANCE GUIDELINES

NCC 2022 REQUIREMENTS

The National Construction Code (NCC) 2022 Volume One - Building Code of Australia (1 May 2023) provides a set of fire hazard properties requirements for floor coverings and wall linings within Class 2 to 9 buildings.

Specification 7 Fire hazard properties (formally NCC 2019 Specification C1.10) is the standard that sets out the requirements of these materials. Different class buildings and areas of a building have different requirements to adhere to, it also outlines the main test methods used to determine these properties outlined below; Forbo offers a complete product offer that complies with the NCC fire hazard properties requirements.

Floor linings and floor coverings fire hazard property requirements – NCC 2022 Specification S7C3 (formally 2019: C1.10: 3)

A floor lining or floor covering must have:

- a. A **critical radiant flux** (CRF) not less than that listed in Table S7C3;
- b. In a building **not protected by a sprinkler system** (other than a FPAA101D or FPAA101H system complying with Specification 17), a **maximum smoke development rate of 750 percent-minutes**; (Smoke Value in %.min).



The critical radiant flux (CRF) is the critical heat flux at extinguishment (CHF in kW/m²) and the smoke development rate (Smoke Value in %.min) are determined by the **AS ISO 9239.1**, this standard is identical with and has been reproduced from ISO 9239-1, Reaction to fire tests for floorings, Part 1: Determination of the burning behaviour using a radiant heat source.

- c. A **group number** complying with S7C6 (b), for any portion of the floor covering that is **continued more than 150 mm up a wall**.

Table S7C3 - Critical radiant flux (CHF in kW/m²) of floor linings and floor coverings

Class of building	Buildings not fitted with a sprinkler system	Buildings fitted with a sprinkler system	Fire-isolated exits and fire control rooms	Suitable Forbo flooring product(s):
Class 2, 3, 5, 6, 7, 8 or 9b, excluding Class 3 accommodation for the aged and Class 9b as specified below	2.2 kW/m ²	1.2 kW/m ²	2.2 kW/m ²	All Forbo products
Class 3 accommodation for the aged	4.5 kW/m ² (see note)	2.2 kW/m ²	4.5 kW/m ² (see note)	All Forbo products
Class 9a patient care areas	4.5 kW/m ² (see note)	2.2 kW/m ²	4.5 kW/m ² (see note)	All Forbo products
Class 9a areas other than patient care areas	2.2 kW/m ²	1.2 kW/m ²	4.5 kW/m ² (see note)	All Forbo products
Class 9b auditorium or audience seating area used mainly for indoor swimming or ice skating	1.2 kW/m ²	1.2 kW/m ²	2.2 kW/m ²	All Forbo products
Class 9b auditorium or audience seating area used mainly for other sports or multi-purpose functions	2.2 kW/m ²	1.2 kW/m ²	2.2 kW/m ²	All Forbo products
Class 9c resident use area	N/A	2.2 kW/m ²	4.5 kW/m ² (see note)	All Forbo products
Class 9c areas other than resident use area	N/A	1.2 kW/m ²	4.5 kW/m ² (see note)	All Forbo products

Note: In areas that require a critical radiant flux of >4.5 kW/m², selected Forbo Tessera carpet tiles may not be suitable, please refer to “Forbo Finishes Fire Rating Summary” on page 6.

Reproduced from NCC 2022 Volume One - Building Code of Australia (1 May 2023). The advice provided in this publication is general in nature and is intended as a guide only. Whilst the information in this guide was accurate at the time of publication, it is the users' responsibility to confirm alignment with current standards and/or building codes. Always refer to the Australian Building Codes Board and NCC website: <https://abc.gov.au> for direct information.

FIRE RESISTANCE GUIDELINES

NCC 2022 S7C4 WALL LININGS

Wall and ceiling linings fire hazard property requirements – NCC 2022 Specification S7C4 (formally 2019: C1.10: 4)

A **wall/ceiling** lining system or **floor covering that is continued more than 150 mm up a wall** must comply with;

- a. The product **group number** specified in Table S7C4;
- b. In a building not fitted with a sprinkler system (other than a FPAA101D or FPAA101H system complying with Specification 17), must have; **an average specific extinction area less than 250 m²/kg.**



The product group number classification and average specific extinction area (m²/kg) are determined by the **AS 5637.1**, fire test for determination of fire hazard properties wall and ceiling linings.

Table S7C4 - Wall lining materials

Class of Building	Fire-isolated exits & fire control rooms	Public corridors	Specific areas	Other areas
Class 2 or 3, unsprinklered, excluding accommodation for the aged, people with disabilities and children	Group 1	Group 1, 2	Group 1, 2, 3	Group 1, 2, 3
Class 2 or 3, sprinklered, excluding accommodation for the aged, people with disabilities and children	Group 1	Group 1, 2, 3	Group 1, 2, 3	Group 1, 2, 3
Class 3 or 9a, unsprinklered, accommodation for the aged, people with a disability, children and health-care building	Group 1	Group 1	Group 1, 2	Group 1, 2, 3
Class 3 or 9a, sprinklered, accommodation for the aged, people with a disability, children and health-care building	Group 1	Group 1, 2, 3	Group 1, 2, 3	Group 1, 2, 3
Class 5, 6, 7, 8 or 9b schools , unsprinklered	Group 1	Group 1, 2	Group 1, 2, 3	Group 1, 2, 3
Class 5, 6, 7, 8 or 9b schools , sprinklered	Group 1	Group 1, 2, 3	Group 1, 2, 3	Group 1, 2, 3
Class 9b other than schools, unsprinklered	Group 1	Group 1	Group 1, 2	Group 1, 2, 3
Class 9b other than schools, sprinklered	Group 1	Group 1, 2	Group 1, 2, 3	Group 1, 2, 3
Class 9c, sprinklered	Group 1	Group 1, 2	Group 1, 2, 3	Group 1, 2, 3



For buildings not fitted with a sprinkler system **“unsprinklered”**, not only it must a material meet the required group number rating, it also must have an average specific extinction area of less than 250 m²/kg.

“Specific areas” means within;

- i. for Class 2 and 3 buildings, a sole-occupancy unit and
- ii. for Class 5 buildings, open plan offices with a minimum floor dimension/floor to ceiling height ratio > 5; and
- iii. for Class 6 buildings, shops or other building with a minimum floor dimension/floor to ceiling height ratio > 5; and
- iv. for Class 9a health-care building , patient care areas; and
- v. for Class 9b theatres and halls, etc, an auditorium; and
- vi. for Class 9b schools, a classroom; and
- vii. for Class 9c buildings, resident use area.

FIRE RESISTANCE REQUIREMENTS GUIDE

Different areas and class buildings require different fire resistance requirements as outlined by the National Construction Code 2022 (NCC), Specification 7. We've created a simplified guide to help you select the right Forbo products from floor coverings to wall linings. Always check and confirm with a fire certifier as individual buildings and spaces can differ.

CLASS 2 OR 3

Excluding accommodation for the aged, people with disabilities and children

- Class 2: A building containing two or more sole-occupancy units each being a separate dwelling.
- Class 3: A residential place for long term or transient living for a number of unrelated persons (e.g. boarding house, hostels, etc.).

Wall linings, sprinklered - NCC 2022 S7C4

Location	Fire exits & fire control rooms requirement: Group 1	Public corridors requirement: Group 1,2,3	Specific areas requirement: Group 1,2,3	Other areas requirement: Group 1,2,3
Suitable product(s):	Onyx+	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board

Wall linings, unsprinklered

	Group 1	Group 1,2	Group 1,2,3	Group 1,2,3
Suitable product(s):	Onyx+	Onyx+	Onyx+ Marmoleum Furniture linoleum Bulletin Board	Onyx+ Marmoleum Furniture linoleum Bulletin Board

Floor linings and floor coverings - NCC 2022 S7C3

Location	Unsprinklered building: CHF: 2.2 kW/m² Smoke: <750%.min	Sprinklered building: CHF: 1.2 kW/m²	Fire-isolated exits & fire control room: CHF: 2.2 kW/m²
Suitable product(s):	All Forbo products	All Forbo products	All Forbo products



CLASS 3 OR 9A

Accommodation for the aged, people with a disability, children and health-care building

- Class 3: A residential place for long term or transient living for a number of unrelated persons (e.g. boarding house, hostels, etc.).
- Class 9a: patient care areas in a health-care building

Wall linings, sprinklered - NCC 2022 S7C4

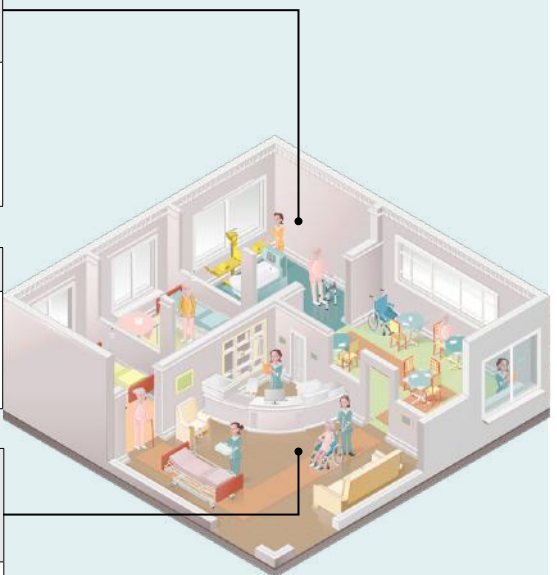
Location	Fire exits & fire control rooms requirement: Group 1	Public corridors requirement: Group 1,2,3	Specific areas requirement: Group 1,2,3	Other areas requirement: Group 1,2,3
Suitable product(s):	Onyx+	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board

Wall linings, unsprinklered

	Group 1	Group 1	Group 1,2	Group 1,2,3
Suitable product(s):	Onyx+	Onyx+	Onyx+	Onyx+ Marmoleum Furniture linoleum Bulletin Board

Floor linings and floor coverings - NCC 2022 S7C3

Location	Unsprinklered building: CHF: 4.5 kW/m² Smoke: <750%.min	Sprinklered building: CHF: 2.2 kW/m²	Fire-isolated exits & fire control room: CHF: 4.5 kW/m²
Suitable product(s):	All Forbo products* (see note)	All Forbo products* (see note)	All Forbo products* (see note)



CLASS 5, 6, 7, 8 OR 9B SCHOOLS

- Class 5: An office building used for professional or commercial purposes.
- Class 6: A shop or other building for the sale of goods by retail or the supply of services direct to the public (e.g. cafe, restaurant, hairdresser, etc.).
- Class 7: A building which is a carpark (7a) or a building for the storage and display of goods or produce for sale by wholesale (7b).
- Class 8: A laboratory or a manufacturing plant.
- Class 9b: Schools, a class room, theatres and halls etc.

Wall linings, sprinklered - NCC 2022 S7C4

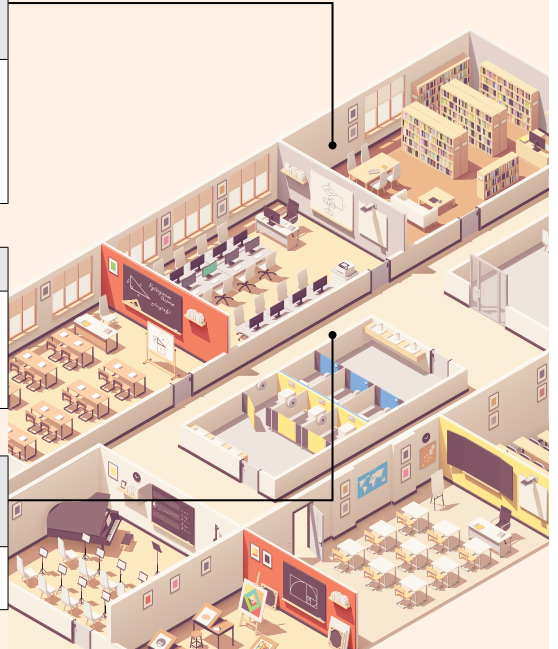
Location	Fire exits & fire control rooms requirement: Group 1	Public corridors requirement: Group 1,2,3	Specific areas requirement: Group 1,2,3	Other areas requirement: Group 1,2,3
Suitable product(s):	Onyx+	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board

Wall linings, unsprinklered

	Group 1	Group 1,2	Group 1,2,3	Group 1,2,3
Suitable product(s):	Onyx+	Onyx+	Onyx+ Marmoleum Furniture linoleum Bulletin Board	Onyx+ Marmoleum Furniture linoleum Bulletin Board

Floor linings and floor coverings - NCC 2022 S7C3

Location	Unsprinklered building: CHF: 2.2 kW/m² Smoke: <750%.min	Sprinklered building: CHF: 1.2 kW/m²	Fire-isolated exits & fire control room: CHF: 2.2 kW/m²
Suitable product(s):	All Forbo products	All Forbo products	All Forbo products



CLASS 9B OR 9C

Other than schools

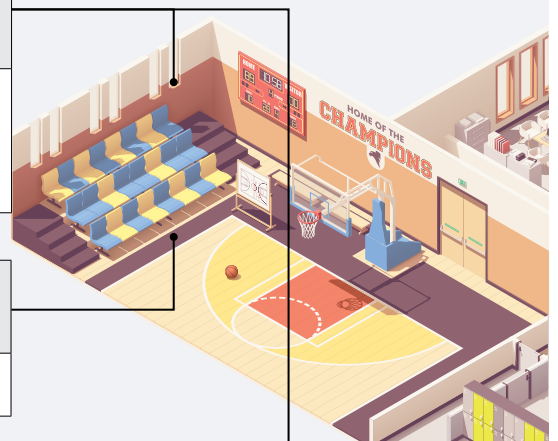
- Class 9b: Auditorium or audience seating area used mainly for other sports or multi-purpose functions.
- Class 9c: Resident use area.

Wall linings, sprinklered, Class 9B & 9C - NCC 2022 S7C4

Location	Fire exits & fire control rooms requirement: Group 1	Public corridors requirement: Group 1,2	Specific areas requirement: Group 1,2,3	Other areas requirement: Group 1,2,3
Suitable product(s):	Onyx+	Onyx+	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board	Onyx+ Marmoleum Sphera Furniture linoleum Bulletin Board

Floor linings and floor coverings, Class 9B - NCC 2022 S7C3

Location	Unsprinklered building: CHF: 2.2 kW/m² Smoke: <750%.min	Sprinklered building: CHF: 1.2 kW/m²	Fire-isolated exits & fire control room: CHF: 2.2 kW/m²
Suitable product(s):	All Forbo products	All Forbo products	All Forbo products



Floor linings and floor coverings, Class 9C - NCC 2022 S7C3

Location	Unsprinklered building: N/A	Sprinklered building: CHF: 2.2 kW/m²	Fire-isolated exits & fire control room: CHF: 4.5 kW/m²
Suitable product(s):	All Forbo products	All Forbo products	All Forbo products* (see note)



***Note:** In areas that require a critical radiant flux of 4.5 kW/m², selected Forbo Tessera carpet tiles may not be suitable, please refer to **"Forbo Finishes Fire Rating Summary"** on page 6.

FORBO FINISHES FIRE RATING SUMMARY

		Floor covering (ISO 9239-1)		Wall lining (AS 5637.1)	
Product	Collection	Critical radiant flux (CHF in kW/m ²)	Smoke development rate (%.min)	Group number	Average extinction rate (m ² /kg)
Marmoleum, our linoleum brand	Marmoleum Sheet	>4.5 kW/m ²	<750%.min	Group 3	172.0 m ² /kg
	Marmoleum Modular tile	>4.5 kW/m ²	<750%.min		
	Marmoleum Decibel	>4.5 kW/m ²	<750%.min		
	Marmoleum Acoustic	>4.5 kW/m ²	<750%.min		
	Marmoleum Ohmex	>4.5 kW/m ²	<750%.min		
Off the floor	Bulletin Board			Group 3	239.9 m ² /kg
	Furniture Linoleum			Group 3	47.7 m ² /kg
Safety & wetroom solutions	Surestep Safestep	>4.5 kW/m ²	<750%.min		
	Onyx+ wallcovering			Group 1	149.8 m ² /kg
General purpose vinyl	Eternal	>4.5 kW/m ²	<750%.min		
	Eternal de luxe	>4.5 kW/m ²	<750%.min		
Homogeneous vinyl	Sphera Element Energetic Elite Essence	>4.5 kW/m ²	<750%.min	Group 3	297.8 m ² /kg
	Sphera EC SD	>4.5 kW/m ²	<750%.min		
Acoustic & Loose lay solutions	Sarlon 15 dB	>4.5 kW/m ²	<750%.min		
	Sarlon 19 dB	>4.5 kW/m ²	<750%.min		
	Modul'up compact	>4.5 kW/m ²	<750%.min		
	Modul'up 19 dB	>4.5 kW/m ²	<750%.min		
	Modul'up T.E.	>4.5 kW/m ²	<750%.min		
Luxury vinyl tiles	Allura Flex FL1	>4.5 kW/m ²	<750%.min		
	Allura Flex FL5	>4.5 kW/m ²	<750%.min		
	Allura Puzzle	>4.5 kW/m ²	<750%.min		
Static control & cleanroom	Colorex EC SD	>4.5 kW/m ²	<750%.min		
	Colorex plus EC	>4.5 kW/m ²	<750%.min		
Flocked flooring	Flotex sheet	>4.5 kW/m ²	<750%.min		
	Flotex tile & plank	>4.5 kW/m ²	<750%.min		
Carpet tiles	Tessera Inline	>4.5 kW/m ²	<750%.min		
	Tessera Chroma	4.3 kW/m ²	<750%.min		
	Tessera Cloudscape	4.2 kW/m ²	<750%.min		
	Tessera Basis Pro	>4.5 kW/m ²	<750%.min		
	Tessera Create Space 1	>4.5 kW/m ²	<750%.min		
	Tessera Struktur 1	3.6 kW/m ²	<750%.min		
	Tessera Struktur 2	>4.5 kW/m ²	<750%.min		
	Tessera Perspective	>4.5 kW/m ²	<750%.min		
	Tessera Infused	>4.5 kW/m ²	<750%.min		
	Tessera Accord	>4.5 kW/m ²	<750%.min		
	Tessera Layout & Outline	3.1 kW/m ²	<750%.min		
Entrance flooring	Coral Brush	>4.5 kW/m ²	<750%.min		
	Coral Classic	>4.5 kW/m ²	<750%.min		
	Coral Duo	>4.5 kW/m ²	<750%.min		
	Coral Grip	>4.5 kW/m ²	<750%.min		
	Coral Interior	>4.5 kW/m ²	<750%.min		

GLOSSARY & DEFINITIONS

Building class	Description
Class 2	A building containing two or more sole-occupancy units each being a separate dwelling.
Class 3	A residential place for long term or transient living for a number of unrelated persons (e.g. boarding house, hostels, etc.).
Class 4	A dwelling in a building that is Class 5, 6, 7, 8 or 9 - if it is the only dwelling in the building.
Class 5	An office building used for professional or commercial purposes, excluding buildings of Class 6, 7, 8 or 9.
Class 6	A shop or other building for the sale of goods by retail or the supply of services direct to the public (e.g. cafe, restaurant, kiosk, hairdresser, etc.).
Class 7	A building which is a carpark (7a) or a building for the storage and display of goods or produce for sale by wholesale (7b).
Class 8	A laboratory or a manufacturing plant.
Class 9	A public building such as health care or aged care buildings.

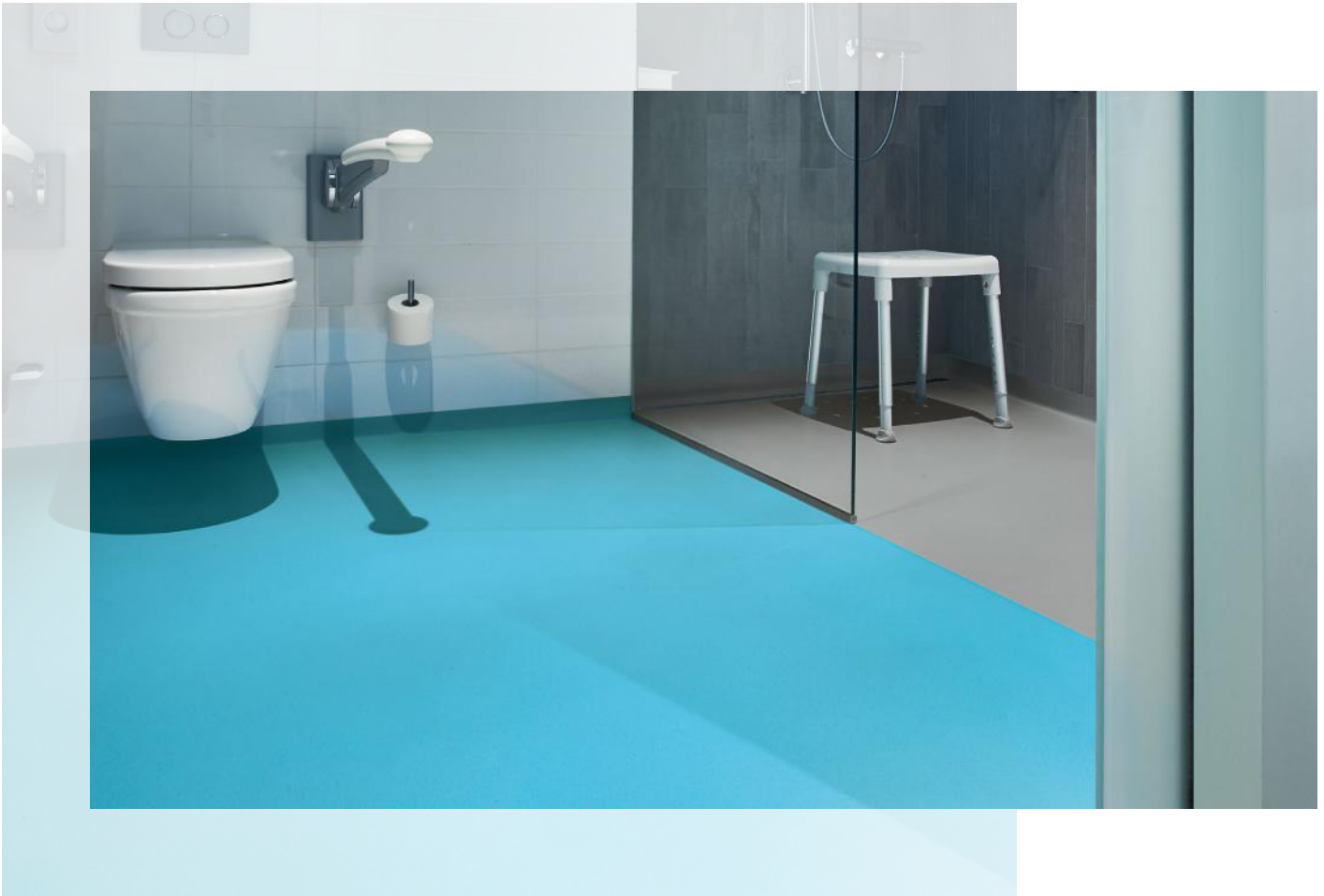
Definitions	
health-care building	A building whose occupants or patients undergoing medical treatment generally need physical assistance to evacuate the building during an emergency and includes: <ol style="list-style-type: none"> a public or private hospital; or a nursing home or similar facility for sick or disabled persons needing full-time care; or a clinic, day surgery or procedure unit where the effects of the predominant treatment administered involve patients becoming non-ambulatory and requiring supervised medical care on the premises for some time after the treatment.
patient care areas	A part of a health-care building normally used for the treatment, care, accommodation, recreation, dining and holding of patients including a ward area and treatment area.
resident use area	Part of a Class 9c building normally used by residents, and; <ol style="list-style-type: none"> includes sole-occupancy units, lounges, dining areas, activity rooms and the like; but excludes offices, storage areas, commercial kitchens, commercial laundries and other spaces not for the use of residents.
schools	Includes a primary or secondary school, college, university or similar educational establishment.
sole-occupancy unit	A room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes: <ol style="list-style-type: none"> a dwelling; or a room or suite of rooms in a Class 3 building which includes sleeping facilities; or a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or a room or suite of associated rooms in a Class 9c building, which includes sleeping facilities and any area for the exclusive use of a resident.
S7C6	S7C6 Lift cars <ol style="list-style-type: none"> a floor linings and floor coverings must have a critical radiant flux not (a) less than 2.2; and wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1.

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More information

If you have any questions regarding the National Construction Code 2022 fire hazard properties standard and requirements for Forbo floor coverings and wall linings, please feel free to contact your local Forbo representative. You can also email us at info.au@forbo.com, we are more than happy to assist you.

In addition, we also have a '[Slip Resistance Flooring Guide](#)' to help you choose the right flooring material for your project.



Forbo Flooring Systems is part of the Forbo Group, a global leader in flooring and movement systems, and offers a full range of flooring products for commercial and affordable housing and new build markets. High quality linoleum, vinyl, textile, flocced and entrance flooring products combine functionality, colour and design, offering total flooring solutions for any environment.

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