BRICK DURABILITY

Salt attack resistance of bricks

Midland Brick

THINK BRICK AUSTRALIA

Bricks are porous building materials, and their long-term performance depends on their ability to resist environmental exposure and deterioration. To ensure durability, clay masonry units are tested to AS/NZS 4456.10 *Determining resistance to salt attack* for resistance to sodium sulphate and/or sodium chloride. Units are then classified under AS/NZS 4455 and AS 3700 into three durability grades based on their intended exposure conditions and resistance to weathering:

PROTECTED

- Lowest durability class.
- Intended only for use in internal or heavily protected areas where the masonry will not be directly exposed to weathering or ground moisture.

GENERAL PURPOSE

- Standard durability class.
- Tested to AS/NZS 4456.10 with less than 0.4 grams mass loss in 15 cycles.
- Suitable for most normal building applications, including internal and external masonry not subject to severe exposure.

EXPOSURE

- Highest durability class.
- Tested to AS/NZS 4456.10 with less than 0.4 grams mass loss in 40 cycles.
- Required where masonry is exposed to more aggressive environments where salt attack may be more prevalent.

ACHIEVING THE MINIMUM BRICK DURABILITY

AS 3700 Section 5 and AS 4773.1 Section 4 dictate the minimum durability for the components that comprise a masonry wall. Designers must consider the durability grade/class for:

- masonry units,
- mortar, and
- other masonry components (wall ties, lintels, etc).

Table 1 below can be used in conjunction with the map across to determine minimum durability properties to ensure a masonry build meets the standard. Note that a higher durability grade can be selected in each exposure environment and meet compliance requirements.

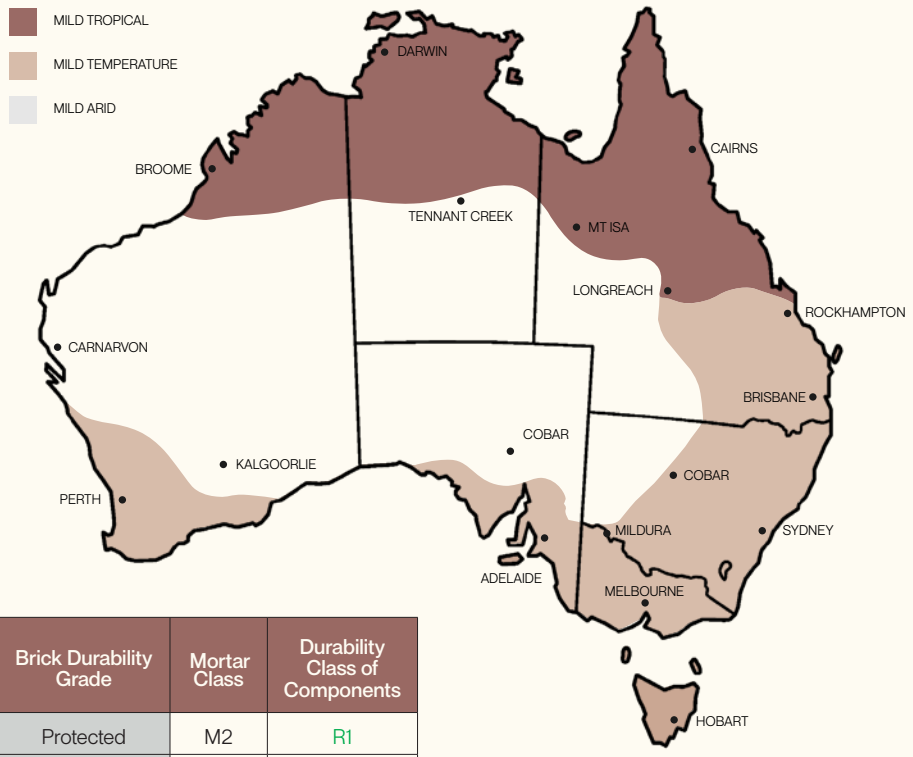

Table 1: Durability Requirements for Masonry Walls

Location	Exposure Environment	Brick Durability Grade	Mortar Class	Durability Class of Components
Interior	Normal	Protected	M2	R1
	Subject to non-saline wetting and drying	General Purpose	M3	R3
	Subject to saline wetting and drying	Exposure	M4	R4
Exterior Coated	Above a DPC	Protected	M2	R1
	Below a DPC	Protected	M2	R2
Below a DPC or in contact with the ground	Non-aggressive soils	General Purpose	M3	R3
	Aggressive soils[5]	Exposure	M4	R4
Exterior	Mild-arid, mild-temperature or moderate	Protected	M2	R1
	Mild-tropical	Protected	M2	R2
	Marine[1]	General Purpose	M3	R3
	Severe Marine[2]	Exposure	M4	R4
	Industrial[3]	Exposure	M4	R4
	Special[4]	(see note 4)		R5

Notes:

1. Areas from 100 m up to 1 km from a non-surf coast and from 1 km up to 10 km from a surf coast are marine environments.
2. Areas up to 100 m from a non-surf coast and up to 1 km from a surf coast are severe marine environments.
3. Areas within 1 km of major industrial complexes producing significant acidic pollution are industrial environments.
4. Requirements for especially aggressive environments depend on the nature of the corrosive agents. R5 components should be used. Units and mortars shown by test (or by experience) to be resistant to the particular corrosive agent should be used.
5. Soils in marine, severe marine and industrial environments are classified as aggressive. Farmland where fertilisers, effluent, or other agricultural chemicals may be present can also create aggressive soil conditions.

Published August 2025
www.thinkbrick.com.au

Midland Brick THINK BRICK