

# Safety Glass – Position Statement

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## Background

It has been brought to Kidsafe Australia's attention that the test method in AS/NZS 2208 for toughened safety glass may be inadequate, as glass that has passed this test and been deemed to meet this Standard can still break into long pieces on human impact.

Research has demonstrated that questions regarding the current test method have been an ongoing issue since early the early 2000's and were more recently raised at the Senate Inquiry into Non-Conforming Building Products ([http://www.apf.gov.au/Parliamentary\\_Business/Committees/Senate/Economics/Non-conforming\\_products/Submissions](http://www.apf.gov.au/Parliamentary_Business/Committees/Senate/Economics/Non-conforming_products/Submissions) submission 68).

## Relevant Australian Standards and Definition

- The Building Code of Australia references AS 1288 – 2006, thereby mandating the installation of safety glass in buildings in applications where there is a significant possibility of human impact, such as doors, side panels, shower screens and low-level glass.
- Safety glass (as defined in AS/NZS 2208:1996) is glass which is designed to promote safety and to reduce or minimise the likelihood of cutting and piercing injuries from human impact.
- The definition of Toughened Safety Glass (in clause 1.4.13 of AS/NZS2208:1996) states that *“if fractured, the entire piece disintegrates into small, relatively harmless particles”*.

## Statistics

### Victoria

Statistics from the Victorian Injury Surveillance Unit show that for the 5 year period between 2011/12 – 2015/16, 2,541 Victorians (all ages) were admitted to hospital and 2,635 presented to emergency departments with injuries from contact with broken or shattered glass. Further breakdown into injuries involving safety and non-safety glass isn't possible with the data available.

## The issue

Concerns were initially raised that the test procedure in the current Australian Standard for toughened safety glass is inadequate and dangerous, as it allows the certification of toughened safety glass which does not disintegrate into small relatively harmless pieces, but forms large numbers of long sharp pieces.

The main concern lies with the test method used to break the glass to determine if it can be classified as toughened safety glass. The most commonly used test method involves breaking the glass near the edge of the pane - 13mm from the longest edge, which will usually result in the glass breaking into small particles as required for certification according to the Standard. However, when the glass is broken by impact away from the edge - as is more likely to occur if a person was to impact the glass - testing has demonstrated that the glass fragments may include long shards. If the test method in the Standard was changed to require fragmentation at the panel centre, the same piece of glass which passes the most commonly used testing

method in the Australian Standard, would not meet the requirements to be classified as safety glass if the level of tempering was insufficient.

Therefore, glass classified as toughened safety glass under the current Australian Standard has the potential to break into longer shards and cause serious injury when impacted – which safety glass must not do.

Kidsafe Victoria has recently viewed and documented the testing of 4 mm glass, all of which was certified as toughened safety glass to AS/NZS 2208:1996.

Each piece of the glass tested was permanently marked with the following logo, certifying its conformance with all the requirements of toughened safety glass as specified in AS/NZS 2208.



Photographs of the glass tested are shown below, together with details of the test procedure used in each instance.

**Test 1 – Glass is broken 13mm from the edge according to the test method in AS/NZS 2208.**



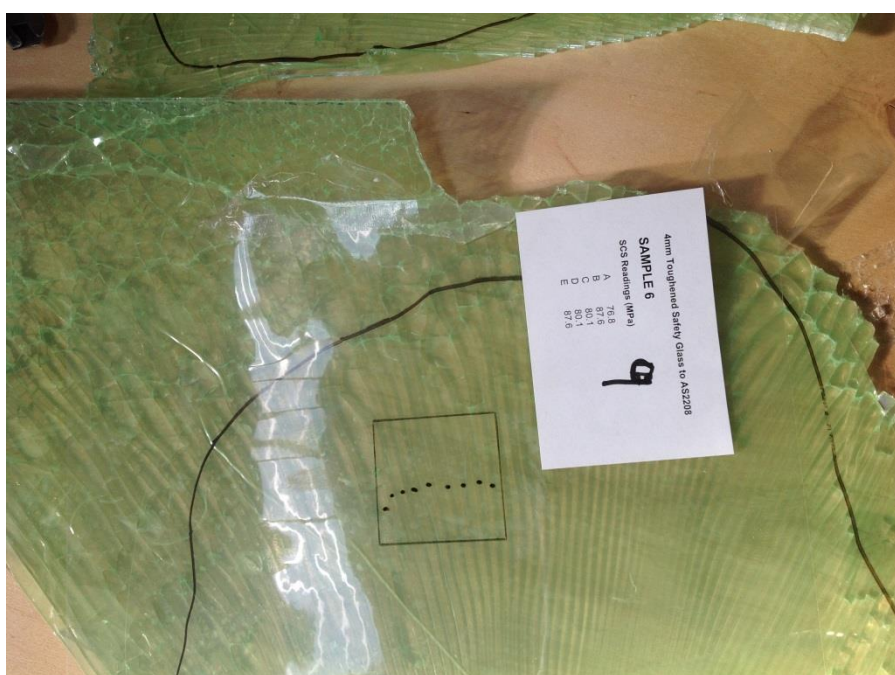
As can be seen in the image above, when the pane of glass was broken using the test method in the current Australian Standard (broken 13mm from the longest edge), it breaks into small particles.

**Test 2 – Glass is broken using the fragmentation test, but at the CENTRE of the glass – this test is not currently specified in the Australian Standard AS/NZS 2208.**



As the images above show, when the pane of glass was broken in the centre (and not near the edge as specified in the current Australian Standard), the glass breaks into large, sharp pieces which could potentially cause serious injury.

**Test 3 – Pendulum impact test - specified in the Australian Standards as an option, but generally not used to test and certify toughened safety glass. The acceptance criteria for this test in AS/NZS – 2006 allow certification of product even if long dangerous shards are generated, a deficiency that requires amendment. This test simulates human impact in the centre of a panel.**



As the above images demonstrate, when the certified piece of toughened glass was broken using the pendulum impact test - which is specified in the Australian Standard, however rarely used by manufacturers to test their safety glass - the glass generated hundreds of long, sharp pieces which could potentially cause serious injury.

## Key areas/messages for prevention

Kidsafe recommends that AS/NZS 2208 be revised to require all toughened safety glass to be tested using a centre punch fragmentation test at the centre of the test panel. This would ensure that all glass certified as 'toughened safety glass' adequately promotes safety and reduces or minimises the likelihood of cutting and piercing injuries from human impact.

The evidence suggests that the current test method allows glass that can still break into long particles on human impact to be certified as safety/toughened glass conforming to AS/NZS 2208, posing a serious safety concern not only for children, but adults as well.

Testing has shown that 4 mm, 5 mm and 6 mm thick toughened safety glass supplied for installation mainly in apartments, houses and schools currently and in the past, is very likely to break in an unsafe manner. These are installed in shower screens, patio and other doors and side panels, low level glass and other areas identified in AS 1288 as being prone to human impact.

It is imperative that the current AS/NZS 2208 Standard be revised to prevent further installation of unsafe toughened glass and for steps to be taken to mitigate the risk from such glass that is currently installed.

## References and links

- Victorian Injury and Surveillance Unit, Monash University 2017, Glass related injuries 2011-2017.