

Australian/New Zealand Standard[®]

Plastic roof and wall cladding materials— Methods of test

Method 6: Determination of impact resistance

1 SCOPE This Standard sets out a method for determining impact resistance of plastic building sheets.

2 APPARATUS The following apparatus is required:

- (a) Metal impactor guide tube held vertically by a suitable support.
- (b) Cylindrical metal impactor of suitable mass capable of falling freely in the metal tube.
- (c) Impact hammer consisting of a flat head and cylindrical shank with a hemispherical end of 12.5 mm diameter.
- (d) Cylindrical base with a central hole of 16.5 mm diameter. A typical apparatus is illustrated in Figure 1.

NOTE: The Gardner Reverse Impact Apparatus has been found suitable.

3 TEST SPECIMENS Each test specimen shall consist of a nominally flat section cut from the full thickness of the cladding. Test specimens shall be a square of side at least 35 mm, except for ribbed specimens, which shall include at least two ribs.

4 CONDITIONING For conditioning at 23°C, each test specimen shall be conditioned in either air or water immediately prior to testing for a period not less than that indicated in Table 1.

For conditioning at 0°C, each test specimen shall be conditioned in either air or a water/ice mixture immediately prior to testing for a period not less than that indicated in Table 2.

TABLE 1
CONDITIONING OF TEST SPECIMENS
FOR 23°C IMPACT TEST

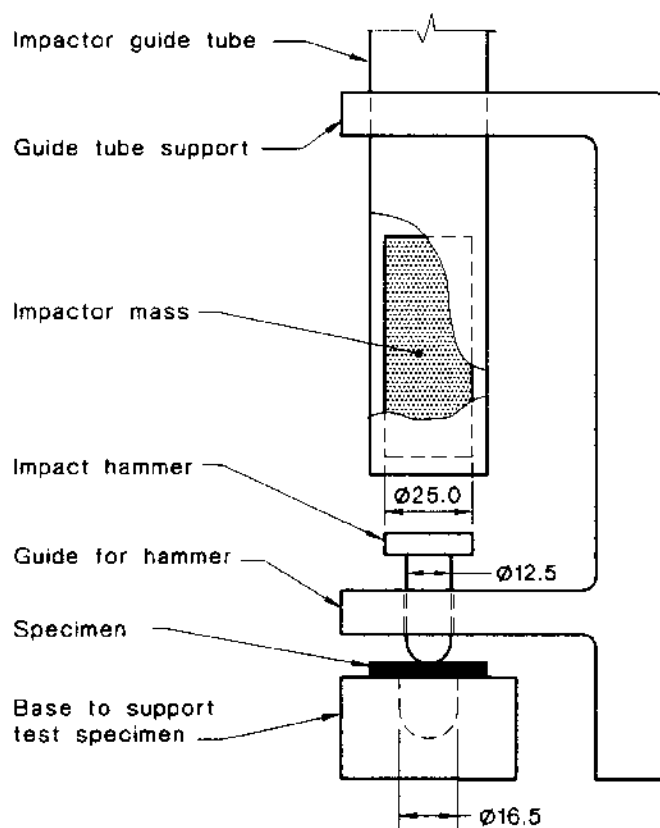
Minimum wall thickness mm	Conditioning time in water or moving air (see Note 1)	Conditioning time in still air (see Note 2)
≤5	5 min	15 min
>5 ≤10	15 min	35 min
<10 ≤20	30 min	90 min
>20	2.5 h	5 h

TABLE 2
CONDITIONING OF TEST SPECIMENS
FOR 0°C IMPACT TEST

Minimum wall thickness mm	Conditioning time in cooling medium or moving air (see Note 1)	Conditioning time in still air (see Note 2)
≤5	5 min	20 min
>5 ≤10	15 min	45 min
>10 ≤20	40 min	2 h
>20	3 h	6 h

NOTES:

- 1 These conditioning times apply when the test specimens are immersed in water or in a circulating air current produced by means of a fan or other device.
- 2 This is considered to be normal laboratory atmosphere.



DIMENSIONS IN MILLIMETRES

FIGURE 1 DIAGRAM OF IMPACT APPARATUS

5 PROCEDURE The procedure shall be as follows:

- (a) Choose a cylindrical impactor of mass (kg) and an impact height (m) such that $\text{mass} \times \text{height} \times 9.81$ equals or exceeds the required impact energy in Joules.
NOTE: An impact drop height should be chosen that is as close to 1 m as possible.
- (b) Place the test specimen on the cylindrical base over the hole with the exposed face facing the impact tool. Where ribbed construction is involved, the specimen should be placed in such a way that the impact occurs midway between the closest spaced ribs.
- (c) Place the impact hammer in its guide arm and allow it to rest on the test specimen so that if the test specimen were removed, the hemispherical end of the hammer would drop into the hole.
- (d) Raise impactor mass in its guide tube to the required height and allow to drop on to the flat head of the impact hammer transferring the impact energy to the test specimen.
- (e) Continue testing new specimens until a determinate result is obtained (see Clause 6).

6 DETERMINATION OF RESULT Compare the number of strikes with the number of broken test specimens (see Figure 2). The results shall be interpreted as follows:

- (a) If the true impact rate falls within Region C (TIR above 10%), the result shall be reported as a failure.
- (b) If the true impact rate falls within Region A (TIR below 10%), the result shall be reported as a pass.
- (c) If the result falls in Region B, the result is indeterminate. In this case, testing shall be continued until a positive result is obtained or until it becomes clear that a result in Region A is most unlikely, in which case, the result shall be reported as a failure.

7 REPORT The test report shall contain the following:

- (a) Description of the test specimen.
- (b) The impact energy, in joules.
- (c) The impact height, in metres.
- (d) Number of test specimens tested.
- (e) Number of test specimens which failed.
- (f) Report of pass or failure according to Clause 6.
- (g) Reference to this Australian/New Zealand Standard, i.e. AS/NZS 4257.6.