

AUSTRALIAN STANDARDS COMPLIANCE OVERVIEW FOR PLAYGROUND SURFACING

Certification of Compliance
to AS 4422:1996

What you need to know about installing compliant rubber playground safety surfacing

Introduction

The Australian Standard AS 4422:1996 specifies testing requirements to determine the Critical Fall Height (CFH) for playground safety surfaces. The CFH is determined by dropping an instrumented headform from various heights onto the surface and measuring the point where one of two safety criteria are exceeded; those criteria are the Head Injury Criterion exceeding 1000, and the maximum acceleration due to the impact exceeding 200g. Heights tested include those which produce measurements that satisfy the relevant criterion and those which exceed the relevant criterion.

A1 Rubber's Products

A1 Rubber manufacture a range a surfacing products for playgrounds. For the past decade A1 Rubber has been at the forefront of global innovation in impact attenuation performance. Our commitment to research, product development and factory controlled manufacture in this area has resulted in guaranteed on-site surface compliance to Australian Standards.

All of A1 Rubber's playground surfacing products (in varying thickness and densities) have been subjected to hundreds of impact tests to determine the best product specifications for the Standards criteria. An easy-to-use 'Critical Fall Height Graph' has been mapped from our test data which represents the relationship between surface thickness and Certified Fall Heights.

The 'Critical Fall Height Graph' values are only applicable to product supplied and installed as specified by A1 Rubber. An allowance has been made for slight variations in top layer trowelling, ageing, some temperature variation, some wear and moisture but not for degradation, damage, contamination, hardening of the substrate or significant wear of the product after installation and use on site.

Substrates

Varying substrate types do affect testing results of impact attenuating surfacing systems. Sub-bases such as crusher dust displace with impact. Accordingly displacement substrate values are better than shown, however it is recommended that the concrete substrate values as shown be used for the safest option when impact testing could be a condition precedent to payment. If you require the payment on time, use the hard line.

How to use the Graph

The surface thickness' are shown at the bottom of the graph. The CFH values are shown vertically on the side of the graph. The determination for a CFH relating to the play equipment is always specified by the manufacturer of the equipment or the playground architect. To determine the surface thickness from the known CFH value simply follow the line across from the CFH value until it meets the mapped test result lines. Choose either the concrete line or the crusher-dust line and follow it vertically downwards to determine the thickness required.

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Determining the Surface Layers Thickness'

All thickness values shown on the graph are for the combined thickness of the top surface layer and the shockpad layer. Our rubber playground systems require the top surface layer thickness target to be 15mm up to the total surface thickness of 65mm. Surfaces which are a total of 70mm or thicker require the top layer to be increased to 20mm. Following this guideline offers the best surface support and strength during an impact event from elevated heights.

Applicable surface types

The Critical Fall Height Graph is applicable to the following A1 Rubber full playground surface systems:

- OneSafe – CSBR over Aero Shockpad Underlays
- Luxafe – EPDM over Aero Shockpad Underlays
- AeroCool – AeroCool tiles and coatings over Aero Shockpad Underlays
- Plátile – Plátiles over Aero Shockpad Underlays
- Synthetic Grass – Synthetic grass over Aero Shockpad Underlays

Note: A standard 19mm sand filled synthetic grass layer offers no benefit or detriment to the CFH value and therefore no thickness inclusion is apportionable to the overall system. Some high density short pile synthetic grasses have a slight benefit to the value by approximately 5mm.

Conclusion

The objective of the Australian Standard 4422:1996 is to minimise the severity of head injury resulting from a fall. The standard gives a method of test by which impact attenuation can be determined on surfacing products. From these Critical Fall Height tests results can be mapped (see graph) that represent the upper limits in effectiveness for reducing head injury from falls onto these products.

The values shown in the graph have been determined from test results as required by the standard. Certification of conformance to the standard in the form of a 'Certificate of Compliance' can be provided by A1 Rubber after completion for each specific site. Please don't hesitate to contact A1 Rubber if you require further information on this subject.

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