

PLAYGROUND SURFACING

...Injury Severity and Liability

by Rolf Huber, B. Comm

CONTRACTORS:

Limit your liability exposure by selecting a surface that meets the following:

...manufacturer provides test results for compliance with F-1292 with G-max of less than 200 and HIC of less than 1,000 for the maximum fall height of the playstructure installed

...Install the surface according to the specification of the performance tests, and

...on site testing by removal of a test core of MAX/HIC within one month of the installation to ensure the performance of the surface for impact attenuation at the time of installation.

Numerous studies have indicated that 60-70% of all playground injuries requiring medical attention are as a result of a fall to the surface under the playground equipment.

Issues of liability, and the risk exposure of the designer, manufacturer, contractor, owner/operator of any play space is significant.

the G-max which measures peak acceleration of the skull as it falls to the surface. According to the standard, life threatening injury is not expected to occur if the G-max is less than 200. The second method is the HIC which measures the total force that is applied to the skull during acceleration. A severity index (SI) of more than 1,000 represents a danger to life.

established will, in part, be dependent upon the ability of the plaintiff to find experts that are able to provide evidence as to the danger that is present within a site. It is the responsibility of everyone involved in the construction of playgrounds to provide the maximum standard of care as they are able. Failure to do so may result in injury, and/or financial loss.

⚠ WARNING

INSTALLATION OVER A HARD SURFACE SUCH AS CONCRETE, ASPHALT, OR PACKED EARTH MAY RESULT IN SERIOUS INJURY OR DEATH FROM FALLS.

TEST and PROCEDURES for PLAYGROUND SURFACING

Test procedures for testing the impact attenuation of safety surfaces have developed through input of professionals throughout the world. The standard in North America is the ASTM F-1292. (The most recent re-vision was made in 1999)

Three major types of head injuries can occur as a result of impact. The first is deformation of the skull, when skull fracture and concussion can occur. The second is a concussion caused by the difference in relative motion of the brain and skull, and the third is damage to the neck ligaments, cervical cord, and/or brain stem produced by rotation and stretching of the head.

There are two scientific measurements used for determining the total amount of force that can be applied to a skull before an injury requiring medical attention is expected to occur. First,

It is important to note that the threshold level of 200 G-max and a HIC of 1,000 being a danger to life. This raises the question of potentially causing concussion and serious brain damage. Since an injury can and do occur while the surface is in service, the potential for a reduction in resilience over time must be taken into consideration at the time of surface selection. Installation of a surface that provides test data, at or close to, the thresholds should be avoided and a surface with a G-max of under 160 should be seriously considered. This will allow for changes that can and do occur during the life of the surface and its exposure to the outside environment. Additionally, a maintenance program is essential to retention of the attenuating properties of a surface system over time.

Irrespective of the tests that are performed according to ASTM 1292, the surface must be installed under a play structure and perform as anticipated. In the past liability for the performance of the surface has been limited to the tests originally performed on the designed system. The only option to testing a surface in service has been the removal of the section of a core sample of the surface and testing it in a laboratory. This is difficult and costly.

The introduction of the MAX/HIC instrumented head form provide the capability to measure a G-Max and HIC of a surface at ambient temperature at the time of testing wherever the surface is located. (See Q&A on page . . . for more about the instrumented head form) Failure of the surface at any time during its life will raise the exposure for liability to all person involved in the surface selection, installation and operation. To the extent to which negligence and therefore liability exposure can be

LIABILITY and NEGLIGENCE

The most commonly accepted definition of negligence as stated by Baron Alders in 1856 is, "the omission to do something which a reasonable man, guided upon those considerations that ordinarily regulate the conduct of human affairs, would do, or something which a prudent or reasonable man would not do" (1Blyth v. Birmingham Waterworks Company (1856) 11 Ex. 781 at 784)

With regard to a playground, negligent parties may include, but are not limited to:

- an employee who may be a direct or proximate cause of an injury
- the contractors and manufacturers involved in the playground
- the designer and/or specifier of the playground
- the supervisor, manager, owner and /or operator of the playground
- members of the board operating the playground
- any unit of government or agency that has sponsored or funded the construction of the playground

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He has served as a member of the surfacing sub-committee ASTM F08.63 since 1994.

Currently he is the task group leader of a Standard Guide for playground surfacing. Mr. Huber is a certified playground inspector with CCPI and an associate teacher for the Ontario Parks Association Playground Academy.



National Playground Contractors Association