

◆ EVERPLAY NEWS ◆

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◆ Standards

EVERPLAY LEADS ON

We are living in an increasingly complex world with products and services that are based upon technology that is not readily available or understood. To this end standards have been developed to protect the potential purchaser. This protection generally relates to the health and safety of the user, however there are standards that also provide for certain durability based upon performance criteria and construction methods.

Every major industrialized country has an organization that develops and maintains standards. For Canada it is the CSA. For the United States it is the ASTM and for Germany it is the DIN. The development of standards is both costly and time consuming. As a result the standards developed by one country are adopted for use in other countries. Therefore standards related to a particular product become the industry standard and should be abided to without regard to the country of origin of the standard. It is important to understand that standards are not developed by manufacturer's, but there are representatives from academia, consumers, government and manufacturer's developing what in the end is a consensus. This generally makes standards a minimum benchmark.

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Site Testing is VALID

There has been some controversy regarding the testing on site of playground surfaces once they have been installed.

The ASTM F1292 has become the standard in the industry for the surfaces that are installed. This standard outlines:

- the scope being "for surface systems to be used under and around any piece of playground equipment from which a person may fall".
- the test procedure as being "ASTM F1292, Procedure C"
- the laboratory

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◆ Liability

Are you at RISK?

Playground Surfacing, Injury Severity and Liability

Over the past 25 years a significant volume of material has been produced with regard to playground injuries and injury reducing playground surfacing. The publication of various standards in Canada, and the United States has added to the awareness of professionals in all aspects of playground design an heightened awareness of risk by those engaged in the installation and operation of playground facilities.

The issue of risk management, liability and the risk exposure of the designer, manufacturer, contractor, owner or operator of any play space has become a significant problem. Understanding the criteria and standards that

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1 Surfacing Standards

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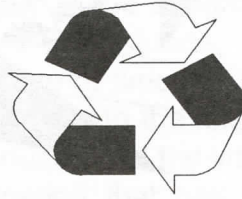
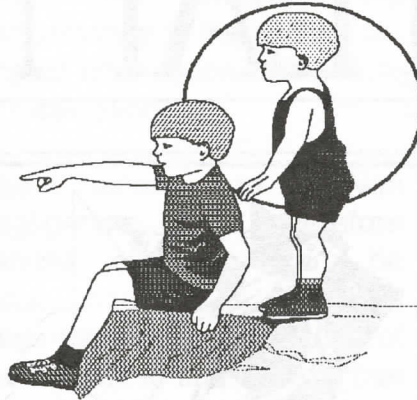
3 Your Liability and Surfacing

EVERPLAY, page 1 The standards developed by the CSA have an impact upon our lives from the time we get up and throughout the day. There are standards for the electrical appliances that we utilize, the performance of protective equipment such as hard hats, sports equipment and safety harnesses. The CSA Z614-M90 standard for Playspaces and Equipment is designed to protect children during their use of the equipment and surrounding environment. In Canada, certain standards developed at ASTM and DIN are readily adopted. Examples of these would be the standards determining fire testing and procedures for the testing and describing drugs.

At EVERPLAY we believe that no matter where a standard has been developed that has an impact on our products, we will provide the product that as a minimum meets and generally exceeds that standard. As a result we will conform to and advocate the following of the CSA-Z614-M90 standard for Playspaces and Equipment, the ASTM F1292 standard for playground surfacing, and the DIN 18035 part 6 standard for Sports Grounds, Synthetic Surfacing. This latter standard relates to the construction, tests and maintenance of synthetic surface used in play, recreation and athletics. Of specific importance for purchasers of water permeable systems such as EVERPLAY, the standard, in section 4.4, states that the base under the synthetic must be permeable to water. This is of particular importance for runing tracks in the traditional 13mm or less.

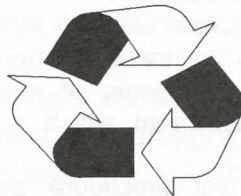
Adherence to these standards coupled with site testing, where the standard allows, provides our EVERPLAY customers

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the quality assurance that they have come to expect and deserve.

AT EVERPLAY we provide state of the art surfaces, and are committed to the long-term performance and durability of every EVERPLAY installation.



TESTING, page 1 temperature for tests as -1, 23 or 49 degrees C
 - while in use temperature range as being -1 to 49 degrees C
 - the performance criteria as being less than 200 G-Max or 1000 HIC
 - Field Test Procedure, the Report and Precision allowed
 - the height from which the test is to be conducted is specified by the purchaser of the surface

Since the ASTM F1292 does not define the drop height or location, the standards that cross reference to this standard come into play. There two such standards, the CSA-Z614-M90 and the CPSC. They detail from where a measurement is to be taken and generally state that the fall height is the highest accessible part of the play equipment. Particularly this is the top of guardrails, top of climbing nets and climbers, level of the horizontal ladder and the pivot point where the swings suspending elements are attached to the supporting structure.

The portable test instrumentation is available and the test can be performed by anyone competent in the following of the procedures outlined by the standards. To suggest that either CSA or ASTM would certify the tester is in a work ridiculous since they do not certify anyone involved the testing of standards.

Site Testing is a reality and must be part of the installation specification or owners, specifiers and designers may find themselves responsible for the performance, liability and any costs associated with replacement or injuries

RISK, page have been established and the potential for injury will assist in determining what, if any, risk is involved.

Negligence and Liability

Specific liability for negligence and occupiers liability attaches to:

- an employee who may be a direct or proximate cause of an injury;
- the contractor(s) and manufacturer(s) 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; and
- any unit of government or agency that has sponsored or funded of the construction of the playground.

It is obvious that the exposure to liability is very real. The volume of documentation with regard to playground safety and the standards that have been developed have provided the knowledge required to prevent most serious injuries and liability in the playground and to properly manage risk. The degree of care that must be provided to the user by particular individual parties will be determined by the skill or knowledge of the individuals relative to

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the involvement of those individuals.

Formal Tests and Procedures for Playground Surfacing

In Canada, the CSA Z614-M90 requires testing according to ASTM F355 procedure C, which is the test method for the ASTM F-1292, which states:

"6.1 When tested according to the Test Method F355 Procedure C, using the average of the last 2 of 3 drops, no value shall exceed 200 g-max or 1,000 HIC at temperatures of 30, 72 or 120 degrees F (-1, 23 and 49 degrees C, respectively), at the height specified by the purchaser.

6.2 If the surface system, while in use, is tested according to Test Method F355 Procedure C, using an average of the last 2 of 3 drops, at each of three test sites which exceed 200-g's when tested within a temperature range of 30 to 120 degrees F (-1 to 49 degrees C) as determined by section 12, at the height specified by

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purchaser, the surface should be replaced."¹

The ASTM-F1292 in section 12 "Field Test Procedure (Test Method)" provides for site testing of installed surfaces to assure conformance to the performance criteria above.

Three types of head injury can occur as a result of an impact. The first is the deformation of the skull, when skull fracture and concussion can occur. The second is when the relative motion of the brain and the skull is different causing concussion and the third is rotation of the head with respect to the neck and torso producing stretching and damage to any one or all of the neck ligaments, cervical cord and brain stem.

It is important to note that the threshold level of 200 G-max and a HIC of less than 1,000 are on the border of being a danger to life and definitely must raise questions of potentially causing concussion and serious brain damage. Installation of a surface that provides test data at, or close to, the threshold should be avoided and a surface with a G-max of a under 160 should be seriously considered. This will allow for changes that occur during the life of the surface and its

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RISK, page exposure to the outside environment.

Independent Testing, Site Testing and Experts

The invention of the MAX / HIC instrumented head form provides the capability to measure a G-max and HIC as stated in F1292 on site. A failure with MAX/HIC will warrant the expense of the taking of a core sample for testing and confirmation at an independent test laboratory.

Exposure to liability can be limited on behalf of all parties through the selection of a surface that has met the following;

- test results are provided for the surface according to F-1292 and F355 performed by an independent test laboratory and generating a G-max of less than 200 and the HIC of less than 1,000 for the maximum fall height for the play structure installed;
- the surface is installed according to the specifications and duplicates the properties and performance of the tested surface; and
- on site testing by removal of a test core or MAX / HIC within one month of the installation.

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This will ensure the performance of the surface for impact attenuation at the time of installation.

The extent to which negligence and therefore liability exposure can be established will be in part dependent upon the ability of the plaintiff to find experts that are able to provide evidence with regard to the danger that is present within a site. With the passage of time since the field has come to the forefront of the industry and the volume of information that has been generated in the field of playground injuries and related subjects there are a significant number of experts available within industry and academia.

Conclusions

For more than 15 years there has been active discussion and the development of tests and standards within the area of accidents in playgrounds. This volume of information and the ability to test for performance has raised the risk of, and significance of, liability for negligence for designers, specifiers, manufacturers, installers and operators. The availability of information and, in the case of Canada, a National Standard, almost all persons involved in the building of a playground will have skills and experience that will not

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excuse negligence. In addition the invention of on site test apparatus has now allowed for performance testing of actual conditions at any time.

Footnotes

1 American Society of Testing and Materials, ASTM F-1292-91, p.1

References

- 1) Wilkinson & Lockhart, Safety in children's formal playgrounds, (1976)
- 2) American Society of Testing and Materials, ASTM F-1292-91
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- 4) Watson & Tipp, Safety Surfaces for Children's Playgrounds
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- 7) Peter Werner, "Playground Injuries and Voluntary Product Standards for Home and Public Playgrounds", Pediatrics Vol. 69 No. 1, January 1, 1982
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- 10) Canadian Standards Association, CAN/CSA-Z614-M90, A Guideline on Children's Playspaces and Equipment and National Standard for Canada, revised June 1991
- 11) Oppenheim, Lloyd's Non-Marine Underwriters, Insurance Bureau of Canada Bulletin Report AM93-02, Feb 93

