EVERPLAY™

play and recreation surfaces

NO Equal

When Only the Best Will Do

EVERPLAY™
play and recreation surfaces

Table of Contents

Indicates Hyper Link

EVERPLAY™
play and recreation surfaces

NO *Equal*

Playground Protective Surfacing is a complex system that can become a major financial disaster for Owner/Operators, and their Consultants. Generally, surfacing is an afterthought or necessary evil to the main event the Play Structure. Failure to consider the Functional Longevity and Sustainability of the surfacing selection is a problem. EVERPLAY™ has been installed for more than 35 years and provides any project with injury prevention, functional longevity, and sustainability. If the longer view (10 years or more) is taken and maintenance costs are considered, EVERPLAY™ arguably is lower cost than Engineered Wood Fiber (EWF) and provides similar injury prevention to 200mm (8") of EWF.

*EVERPLAY has a **history of long term compliance, functional longevity. and no repairs**, other than vandalism, which is in sharp contrast to tiles and other PIP systems that have a marginal product and reasonable service system during the warranty period. Better to have no need for repairs with EVERPLAY than hope for the continued indulgence of poor quality suppliers.*

The problem that most Owner/Operators and their Consultants face is the determination of the Equal and visual comparisons are misleading and are likely to cost the Owner/Operator significantly in the future.

This paper presents first the technical aspects of Poured-In-Place surface systems that an Owner/Operator must know. The second part is a more detailed explanation with links to relevant articles and knowledge sources that will expand on Standards, and emerging trends that affect asset management, minimizing liability and risk assessment. This is followed by white papers on injury prevention. The white papers are complimented with LA/CES approved courses that will enhance the understanding of diverse issues related to playgrounds. Next there is test data, including test data for the EVERPLAY™ third party laboratory testing long with testing of the same surface at the time of installation and as they stand in 2021. Lastly, we provide you with a Generic Protective Surfacing Specification including a list of standards and test submissions. At any time during this journey, you are invited to contact EVERPLAY™ to discuss your specific needs.

We also provide a **CHECK LIST** for measuring the equivalence of any surface systems to EVERPLAY™

There are critical elements to the design and installation of the Poured-In-Place surfacing, including:

CHEMISTRY: The adhesive forms the bond between the rubber granules

- The adhesive must remain strong – not allowing bonds to break for 15-25 years.
- The adhesive must resist degradation through exposure to UV light causing loss of flexibility.
- EVERPLAY™ utilizes a unique polyurethane binder that is UV stable and has been the same formulation since 1985.
- The adhesive is moisture cured and must be insensitive to moisture changes during installation, preventing "foaming" and a loss of integrity of the bond.
- The adhesive must cure through a range of humidity without draining down, resulting in loose granules and a failed surface.
- The adhesive must cure through a range of temperatures 0° to 40°C (32° to 105°F) without draining down, resulting in loose granules and a failed surface.

RUBBER: Every PIP consists of new and recycled rubber

- New Rubber such as EPDM is defined in ASTM F2157 to include a minimum of 20% and a maximum of 26% of ethylene propylene diene monomer (EPDM).
- Although EPDM itself is stable to ozone & UV, not all EPDM rubber is UV stable for colour. Owners and their designers must assure themselves that the colours they select are stable.
- Recycled rubber can be anything from industrial scrap, belts, hoses, and failed production, to rubber from the fully cured tire rubber that is recycled at end of life.
- Tires from cars and trucks have a history of durability and difficulty to dispose of, and therefore the Owner should use this to ensure they have quality rubber.
- Owners should request an attestation from their supplier that all recycled rubber be exclusively from North American car or truck tires.

EVERPLAY™
play and recreation surfaces

NO *Equal*

INSTALLATION: Weather is a significant factor leading to failures of installed systems

- Heat is a catalyst causing the surface to cure faster and might affect the finished texture.
- Cold slows the cure and low temperatures 0° to 10°C (32° to 50°F) during the 24 to 48 hour cure time can cause the binder to "sink or drain down" and cause the surface to have loose granules and poor bond in the future resulting in failure.
- Temperature fluctuations of greater than 8C and (15F) during the cure time, such as overnight, can result in cracking. These cracks can close during the heat of the day, but the surface looks like shattered glass in the cool morning and evening.
- Accelerating the cure through the application of water in systems such as EVERPLAY™ will counter the potential for cracking during the cure period.
- Water is a chemical and very necessary to cure the moisture cured binders. Generally, water, available as humidity (at 40-60% RH) is sufficient, but that is not the case with every day of installation. Some climates are extremely dry, while others have rainy seasons with rain every day.
- Lack of humidity will retard the cure time causing the binder to "sink or drain down" which will cause the surface to have loose granules and poor bond in the future resulting in failure manifesting as holes in the wear layer.
- Rain during the installation could accelerate the cure or worse, wash the binder from the rubber granules before they can be bonded to each other. Again, a failure is in the future of the wear layer.
- There are systems, such as EVERPLAY™ that welcomes water and water is used during the installation process to accelerate the cure and fix the surface quickly.
- Playgrounds are installed out of doors and will be subject to weather events that will cause the accumulation of water. Some PIP binders begin to swell when submerged for longer periods of time causing swelling of the surface. Repair of the swelling is a warrantable item in all instances.

INSTALLATION TECHNIQUE is critical to the success of any Poured-In-Place system

- As pointed out above, the weather conditions at the time of installation and during the cure will affect the outcome of the system. The crew chief must have critical knowledge of how daily and changing weather conditions must be dealt with for their specific system.
- A crew chief must understand relevant standards. Prior to installation of the EVERPLAY™, the crew chief ensures that the base material is appropriate and properly compacted, the playground equipment is spaced to meet the layout in CSA Z614, slide exits heights are correct and the fall heights are as anticipated, and the crew has enough materials to ensure compliance with contract documents.
- Poured-In-Place systems are batch systems and must be consistently measured, mixed, placed and finished. This can be boring, but to ensure excellent performance and functional longevity, the first batch to the last batch must be identical. This is where the quality of the crew and pride of workmanship and the art to Poured-In-Place become evident with EVERPLAY™.
- Although not top of list for many people, the Health and Safety of the crew is essential to EVERPLAY™ and the crew chief. It is for this reason that all members of the crew need appropriate training in all aspects of Health and Safety. The Safety Data Sheets for all components will dictate the precautions and PPE that are to be used during all aspects of the installation.

COMPLIANCE: Standards and contract specifications dictate performance

- Poured-In-Place systems are generally a high capital investment that needs to always comply with impact attenuation. Premature failure to the impact attenuation can render the entire playground to be a failure.
- Poured-In-Place systems are generally selected to ensure accessibility to the play structures. The CSA Z614, Annex H provides physical measurements for compliance. Additional accessibility information, including a suggested 22° transition from the PIP into EWF can be found in ASTM F2479.
- It is important that warranties include compliance to standards for the entire warranty period. EVERPLAY™ provides a minimum 5-year warranty, with an option for 10 years and include compliance to all performance requirements. The only exclusions are acts of acts of god, vandalism, and settlements of the base.

MAINTENANCE: Every system supplier must provide maintenance instructions

- The EVERPLAY™ system is designed for easy maintenance or no maintenance. Generally, the only maintenance is to remove debris from the surface by sweeping or blowing. History has demonstrated the ease of maintenance for the EVERPLAY™ vs any other system including EWF, making EVERPLAY™ an exceptional choice.

REPAIRS: PIP systems are unique and the need for repairs can be a nightmare for the O/O

- Generally when a PIP surface needs repairs in multiple areas this could mean the surface has reached its end of life. Site testing will determine the options the O/O has.

For the EVERPLAY™ systems repairs are virtually non-existent. Repairs are so rare that when maintenance managers are asked is they are capable of performing repairs and they answer no. This does not mean EVERPLAY™ cannot be repaired, EVERPLAY™ just does not need repairs.

- Repairs are a major consideration for many Poured-In-Place systems, with filling of holes and re-topping of worn surfaces. Repairs must comply with original standards and contract documents. Testing after repair is essential.

TEST DATA: Every system supplier must be able to provide System Test Data

- A playground system is only worth the investment, if it continues to comply with contract documents and standards for 15 to 20 years
- The supplier must be able to provide third party test results for ASTM F3351, 3-temperature testing for 4.25m, 4.9 and 5.5m (14', 16' and 18') for g values at approximately <100 and the HIC values at approximately <700. For EVERPLAY™ the data is presented Here.
- The EVERPLAY™, ASTM F3351 test data indicates the capability of meeting the needs of emerging playground designs.
- More important than the Laboratory Testing of samples is testing of the installed surface in the field with ASTM F3313. This takes place at the time of installation and for more than 10 years following.
- EVERPLAY™, is providing testing for 3 sites, Crosby Park, Mt. Pleasant Park and Big Park. For Crosby and Mt. Pleasant test data at the time of installation and June 2021 are provided to show that in more than a decade, the EVERPLAY™, changes very little in its impact attenuation performance.
- The Big Park reports for 2021 show results for multiple structures ranging from under 5 to 5-12, swings to spinners to climbers bringing challenge and risk to play after 10 years.
- EVERPLAY™, test results show significantly better performance than required in the CSA Z614.

EVERPLAY™
play and recreation surfaces

Check List

The following is a check list of features related to performance of a Protective Surface as defined in CSA Z614, Clause 10.1.

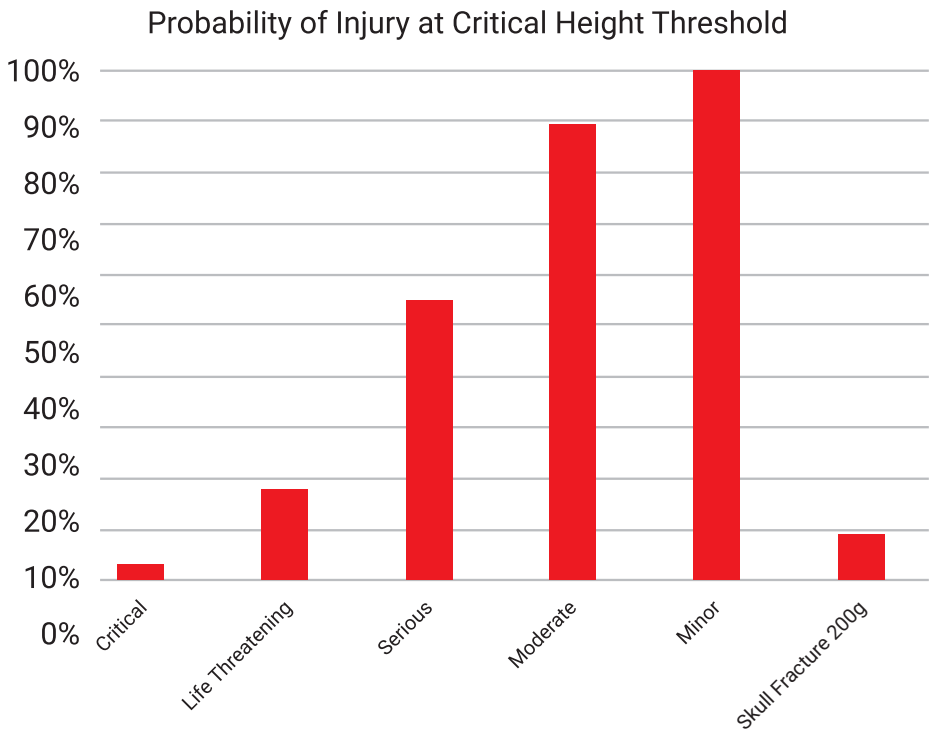
10 Surfacing

10.1 Energy absorbency of a surfacing material
The surfacing material in the protective surfacing zone shall have a *g*max not exceeding 200 and a HIC not exceeding 1000 when tested for the defined fall height. The test methods specified in the ASTM F1292 or CEN EN 1177:1997 shall be for testing protective surfacing.

The level of injury prevention at the limits of the CSA Z614 is stated in the introduction of the EN1177 Standard.

“Limiting the HIC value to a maximum of 1000 is equivalent to a 3% chance of a critical head injury (MAIS 5), an 18% probability of a severe (MAIS 4) head injury, a 55% probability of a serious (MAIS 3) head injury, a 89% probability of a moderate head injury (MAIS 2), and a 99.5% change of a minor head injury (MAIS 2), the average male adult.”

The value of 200g is a 10% risk of skull fracture.



EVERPLAY™
play and recreation surfaces

Check List

Check list to evaluate any other PIP surface against	EVERPLAY™	**OTHERS**
> 30 years of successful playground surfacing installations	✓ **YES**	
Crew Leader with more than 25 years installation experience	✓ **YES**	
< 100g for equipment fall height at time of installation	✓ **YES**	
<125g for equipment fall height after 10 years and on	✓ **YES**	
<570 HIC for structures for children under 5 years for fall height	✓ **YES**	
<570 HIC for structure for children under 5 after >10 years	✓ **YES**	
<700 HIC for structure for children 5-12 for fall height at installation	✓ **YES**	
<700 HIC for structures for children 5-12 for fall height after 10 years	✓ **YES**	
3 temperature testing (ASTM F3351) for G <100 and HIC <700	**4.25m & 4.9m (14' & 16')**	
3 temperature testing (ASTM F3351) for G <105 and HIC <710	**5.5m (18')**	
Utilizing the Same UV resistant binder for more than 30 years	✓ **YES**	
Polyurethane binder through the entire system	✓ **YES**	
Binder does not have a history of expanding when submerged in water	✓ **YES**	
No latex	✓ **YES**	
Proven Functional Longevity for more than 20 years, with at least 3 test reports included with structures over 3m (10')	✓ **YES**	
Sustainability through exclusive use of recycled tires	✓ **YES**	
No industrial scrap rubber used	✓ **YES**	
Ease of Ignition ASTM D2859 – pass with no propagation	✓ **YES**	
No reference to withdrawn or obsolete standards	✓ **YES**	
Water Permeable across the surface	✓ **YES**	
Does not require holes in the surface for drainage like artificial turf	✓ **YES**	
Seams or edges do not curl	✓ **YES**	
>10-year proven bond between seams and colour changes	✓ **YES**	
Recommended to install on compacted granular base	✓ **YES**	
Does not need concrete or asphalt as with tiles to support legs	✓ **YES**	
Does not need loose sand or rubber for ballast like artificial turf	✓ **YES**	
Does not need loose rubber for impact attenuation like artificial turf	✓ **YES**	
Life-Cycle statement for sustainability	✓ **YES**	
Does not need regular repairs, therefore durable	✓ **YES**	

EVERPLAY™ brings the Owner/Operator the confidence their protective surfacing system will not only reduce the frequency and severity of injury over other PIP systems, but in all likelihood will have a lower overall Life-Cycle cost of almost all maintained protective surfaces, including EWF.

For further readings and explanations read;

Huber, Rolf and Kutska, Kenneth, Protecting Children from Surface Impact Injuries, What does Critical Height mean? - Is Specified Height (ASTM F3351) the answer? **DOWNLOAD FULL PDF**

Huber, Rolf, Impact Attenuation Values and Prevention of Head Injuries in Children's Playgrounds Do Children Deserve the Same or Better Protection than in an Automobile Crash **DOWNLOAD FULL PDF**

Kutska, Kenneth, Playground Safety Is No Accident – 6th Edition, Developing a Public Playground Management and Operation Program **View Publication**

Courses at www.standardscompliance.thinkific.com

- Playground Surfacing Technician – Putting Theory to Practice
- Professional Considerations in Design of Public Playspaces
- Ground Level Accessible Routes
- Determination of Fall Height – Compliance with Standards, Liability Issues
- Welcome to EVERPLAY
- Review of changes from ASTM F1487-17 to F1487-21

EVERPLAY™
play and recreation surfaces

Then & Now Test Results

EVERPLAY™ is proud of its Functional Longevity for impact attenuation and durability. CSA Z614 sets impact attenuation limits. EVERPLAY™ sites have demonstrated compliance for more than 20 years. One advantage of being located in Ontario, Canada is the requirement for regular testing and inspections of Child Care playgrounds.

EVERPLAY™ presents test data for 3 parks. Crosby Park, Richmond Hill was first installed in 2008 and the testing has been displayed on the Website for years. The Mount Pleasant Park, Brampton was first installed in 2010. The original test reports, at the time of installation and June 2021 are provided. There is also test result for Regent Park Playground, Toronto, installed in 2011 and the current testing for two of the structures is presented. There is a summary table, followed by the detailed data to support the testing.

PARK AND STRUCTURE	Fall Height	Drop Height	G Install	G 2021	HIC Install	HIC 2021
Limits of CSA Z614-20	None	None	<100	<105	<600	<700
CrosbyPark, Richmond Hill, Ontario						
Spiral slide, top of barrier	3.27m (10.7m)	3.27m (10.7m)	69	80	410	558
Double slide, top of barrier	2.75m(9')	2.75m(9')	75	96	406	586
Single slide, top of barrier	2.75m(9')	2.75m(9')	89	105	474	637
Mt. Pleasant, Brampton, Ontario						
North end of Evos at Glide	2.45m(8')	2.45m(8')	56		258	
North end of Evos, east of net	3.8m(12.5')	3.8m(12.5')		87		609
East side of Evos by climbing net	3.95m(13')	3.95m(13')	72		458	
North side of Evos, west of ring climbers	3.8m(12.5')	3.8m(12.5')		73		505
West side of Evos by rounded monkey bars	3.95m(13')	3.95m(13')	76		550	
Between Loops and ladder overhead climber	3.5m(11.5')	3.5m(11.5')		81		527
Regent Park Playground, Toronto, On						
Galaxy Climber after 10 years						
At Slide	2.45m(8')	2.45m(8')		63		313
At Spinner with Bar	2.85m(9.4')	2.85m(9.4')		89		505
At spinner with platform	2.9m(9.5')	2.9m(9.5')		86		469
Senior PlayStructure after 10 years						
West Side of Hand Over Hand	3.4m(11.2')	3.4m(11.2')		94		629
South East side of Slide	3.4m(11.2')	3.4m(11.2')		100		664
North side of Climbing Wall	3.4m(11.2')	3.4m(11.2')		91		582

For Comprehensive Testing visit EVERPLAY Website for Testing and Case Studies

CANADIAN PLAYGROUND ADVISORY Inc.
2344 Manor House Crt., Mississauga, Ontario, Canada, L5M 5Y3
Tel: (416) 410-7506 Fax: (905) 812-8036

ASTM F1292 Test Report

Date: May 22, 2008

There shall be one report for each play structure or functionally linked play structures and for each type of surface material. Each test shall comprise of a minimum of 3 impact locations per playspace or type of surfacing material with three drops from the same height to the same point. The report shall be descriptive enough to assist the user of the report in determining compliance with contracts and Standards. The CSA Z614-03 and the ASTM F1292 set minimum values as the Gmax shall not exceed 200 and the HIC shall not exceed 1000 from the drop height stipulated by the owner/operator prior to purchase.

Agency requesting the tests	Playground Site	Manufacturer/Supplier/Installer of Surface
Name Pine Valley Enterprises Inc.	Name Crosby Park, Senior Creative	Name Everplay Installation
Address 73A Corstate Ave	Address	Address 18 Automatic Rd, Unit 12
City Concord State/Prov ON	City Richmond Hill State/Prov ON	City Brampton State/Prov ON
Zip/Postal L4K 4Y2 Country CAN	Zip/Postal	Zip/Postal L6S 5N5
Contact name Joe Cacciola	Contact name	Contact name Henry Helps
Contact phone 905 760-2215	Contact phone	Contact phone 416 410-3056

Date of test:	May 22, 2008			Name of test apparatus:		Triax 2000	
Description of surface(s):	Poured Rubber						
Type:	Synthetic	Product name:	Everplay	Date installed:	N/A	Critical height:	> 3.27 m
Thickness of surface material:	N/A	maximum:	15.02 cm	minimum:	11.5 cm	average:	12.77 cm
Evenness (comment on wear patterns and disruption):							
Seams: location:	None	gaps and condition:		level across seams:			
Fasteners:	N/A	type:		condition:			
Weather condition of test:	Sunny, warm	frozen:		dry:		wet:	Yes
Surface condition:							
Temperature: ambient air:		surface temperature taken 6” depth for loose fill or ½” depth for unitary:					
Other conditions or observations:							
Mats, walkways or ramps;	N/A	number:		condition:		requires impact test:	no
Pictures (file names); general playground	See below	test locations:	See below				

The drop height each test location shall be the greater of the critical height for the surface material, the fall height for the play structure as stated in the relevant playground Standard or the height specified by the owner/operator prior to purchase. The drop height is physically measured. The drops are performed from the same drop height to the same point on the surface.

Drop #	Drop height	Drop location in relation to structure	Picture	Velocity cm/sec	Gmax	HIC
1	3.27 m	Spiral slide, top of barrier	DSC0202	792	68	403
2				792	68	394
3				792	70	426
Av. 2&3					69	410
Drop #	Drop height	Drop location in relation to structure	Picture	Velocity	Gmax	HIC
1	2.75 m	Double slide, top of barrier	DSC0884	726	76	450
2				726	77	425
3				729	73	386
Av. 2&3					75	406
Drop #	Drop height	Drop location in relation to structure	Picture	Velocity	Gmax	HIC
1	2.5 m	Single slide, top of barrier	DSC0882	693	85	455
2				693	90	490
3				693	88	457
Av. 2&3					89	474

The results herein reflect the performance of the tested playground surface at the time of testing and at the temperature(s) and ambient conditions reported. Performance will vary with temperature, moisture content and other factors.

Test performed by:	Jonathan Huber	Authorized signature:	

City Richmond Hill, Ontario

MAY 22 2008

PHOTO: DSC_0202.JPG

PHOTO: DSC_0884.JPG

PHOTO: DSC_0882.JPG

CANADIAN PLAYGROUND ADVISORY Inc.
2344 Manor House Crt., Mississauga, Ontario, Canada, L5M 5Y3
Tel: (416) 410-7506 Fax: (905) 812-8036

ASTM F1292 Test Report

Date: June 29, 2021

There shall be one report for each play structure or functionally linked play structures and for each type of surface material. Each test shall comprise of a minimum of 3 impact locations per playspace or type of surfacing material with three drops from the same height to the same point. The report shall be descriptive enough to assist the user of the report in determining compliance with contracts and Standards. The CSA Z614-03 and the ASTM F1292 set minimum values as the Gmax shall not exceed 200 and the HIC shall not exceed 1000 from the drop height stipulated by the owner/operator prior to purchase.

Agency requesting the tests	Playground Site	Manufacturer/Supplier/Installer of Surface
Name Pine Valley Enterprises Inc.	Name Crosby Park, Senior Creative	Name Everplay Installation
Address 73A Corstate Ave	Address	Address 18 Automatic Rd, Unit 12
City Concord State/Prov ON	City Richmond Hill State/Prov ON	City Brampton State/Prov ON
Zip/Postal L4K 4Y2 Country CAN	Zip/Postal	Zip/Postal L6S 5N5
Contact name Joe Cacciola	Contact name	Contact name Henry Helps
Contact phone 905 760-2215	Contact phone	Contact phone 416 410-3056

Date of test:	June 29, 2021			Name of test apparatus:		TriaxTouch	
Description of surface(s):	Poured Rubber						
Type:	Synthetic	Product name:	Everplay	Date installed:	N/A	Critical height:	> 3.27 m
Thickness of surface material:	N/A	maximum:	15.02 cm	minimum:	11.5 cm	average:	12.77 cm
Evenness (comment on wear patterns and disruption):	Excellent at the joints between the leaves and field						
Seams: location:	None	gaps and condition:	excellent	level across seams:	yes		
Fasteners:	N/A	type:		condition:			
Weather condition of test:	Sunny, warm	frozen:		dry:	Yes	wet:	No
Surface condition:							
Temperature: ambient air:	29C	surface temperature taken 6” depth for loose fill or ½” depth for unitary:				29C	
Other conditions or observations:							
Mats, walkways or ramps;	N/A	number:		condition:		requires impact test:	no
Pictures (file names); general playground	See below	test locations:	See below				

The drop height each test location shall be the greater of the critical height for the surface material, the fall height for the play structure as stated in the relevant playground Standard or the height specified by the owner/operator prior to purchase. The drop height is physically measured. The drops are performed from the same drop height to the same point on the surface.

Drop #	Drop height	Drop location in relation to structure	Picture	Velocity cm/sec	Gmax	HIC
1	3.27 m	Spiral slide, top of barrier	105230	801	81	617
2				802	80	573
3				802	80	543
Av. 2&3					80	558
Drop #	Drop height	Drop location in relation to structure	Picture	Velocity	Gmax	HIC
1	2.75 m	Double slide, top of barrier	110255	738	99	618
2				740	95	587
3				739	97	585
Av. 2&3					96	586
Drop #	Drop height	Drop location in relation to structure	Picture	Velocity	Gmax	HIC
1	2.75 m	Single slide, top of barrier	110714	738	105	643
2		This test was done 25 cm higher than in 2008		737	104	633
3				737	105	640
Av. 2&3					105	637

The results herein reflect the performance of the tested playground surface at the time of testing and at the temperature(s) and ambient conditions reported. Performance will vary with temperature, moisture content and other factors.

Test performed by:	Rolf Huber	Authorized signature:	

EVERPLAY™
play and recreation surfaces

ASTM F1292 Gallery

City Richmond Hill, Ontario

JUNE 29th 2021

PHOTO: 110714.jpg

PHOTO: 110255.jpg

PHOTO: 105230.jpg

CANADIAN PLAYGROUND ADVISORY Inc.
2344 Manor House Crt., Mississauga, Ontario, Canada, L5M 5Y3
Tel: (416) 410-7506 Fax: (905) 812-8036

ASTM F1292 Test Report

Date: 24-11-10

There shall be one report for each play structure or functionally linked play structures and for each type of surface material. Each test shall comprise of a minimum of 3 impact locations per playspace or type of surfacing material with three drops from the same height to the same point. The report shall be descriptive enough to assist the user of the report in determining compliance with contracts and Standards. The CSA Z614-03 and the ASTM F1292 set minimum values as the Gmax shall not exceed 200 and the HIC shall not exceed 1000 from the drop height stipulated by the owner/operator prior to purchase.

Agency requesting the tests	Playground Site Evos	Manufacturer/Supplier/Installer of Surface
Name : Hermanns Contracting Ltd.	Name: Mount Pleasant Village	Name: Everplay Installation Inc.
Address :1510 Hwy 27 P.O. Box 369	Address: Commuter Drive	Address: #12-18 Automatic Rd.
City :Schomberg Prov: Ontario	City: Brampton State/Prov: Ontario	City: Brampton State/Prov: Ontario
Postal:L0G -1T0 Country: CANADA	Zip/Postal: Country: CANADA	Zip/Postal: L6S-5N5 Country: CANADA
Contact name: Gord Kerr	Contact name	Contact name Henry Helps
Contact phone:905-939-1230	Contact phone	Contact phone 416-410-3056

Date of test:	24-11-10			Name of test apparatus:		Triax2000	
Description of surface(s):	New Poured in Place with EPDM top layer						
Type:	Unitary	Product name:	Everplay	Date installed:	Nov 2010	Critical height:	≥ 4m
Thickness of surface material:	150mm	maximum:	150mm	Minimum:	150mm	average:	150mm
Evenness (comment on wear patterns and disruption):	N/A						
Seams: location:	At colour change	gaps and condition:	None	level across seams:	No trip hazard		
Fasteners:	No	type:	N/A	condition:	N/A		
Weather condition of test:	Cold, windy and Dry	frozen:	No	dry:	Yes	wet:	No
Surface condition;	New						
Temperature: ambient air:	0C	surface temperature taken 6” depth for loose fill or ½” depth for unitary:					-5C
Other conditions or observations:	Area under construction						
Mats, walkways or ramps;	N/A	number:	N/A	condition:	N/A	requires impact test:	No
Pictures (file names); general playground	See each drop	test locations:	As directed by client				

The drop height each test location shall be the greater of the critical height for the surface material, the fall height for the play structure as stated in the relevant playground Standard or the height specified by the owner/operator prior to purchase. The drop height is physically measured. The drops are performed from the same drop height to the same point on the surface.

Drop #	Drop height	Drop location in relation to structure	Picture	Velocity cm/sec	Gmax	HIC
1	2.45M	North end of Evos structure at Glide 150mm	DSCN5247	694	54	260
2				691	56	263
3				695	55	253
Av. 2&3					56	258
Drop #	Drop height	Drop location in relation to structure	Picture	Velocity	Gmax	HIC
1	3.95M	East side of Evos structure by climbing net 150mm	DSCN5249	880	63	322
2				878	72	449
3				879	72	466
Av. 2&3					72	458
Drop #	Drop height	Drop location in relation to structure	Picture	Velocity	Gmax	HIC
1	3.95M	West side of Evos structure by Rounded Monkey Bars	DSCN5250	880	77	578
2		150mm		881	79	605
3				881	73	494
Av. 2&3					76	550

The results herein reflect the performance of the tested playground surface at the time of testing and at the temperature(s) and ambient conditions reported. Performance will vary with temperature, moisture content and other factors.

Test performed by:	Adam Huber	Authorized signature:	

EVERPLAY™
play and recreation surfaces

ASTM F1292 Gallery

Brampton, Ontario

NOVEMBER 24 2010

PHOTO: DSCN5249.JPG

PHOTO: DSCN5247.JPG

PHOTO: DSCN5250.JPG

PHOTO: DSCN5251.JPG

PHOTO: DSCN5252.JPG

PHOTO: DSCN5253.JPG

1097 West River Rd., Cambridge, Ontario, Canada, N1R 5S5
Tel: 416-410-7506 Fax: 519-267-3802

Protective Playground Surface Test Report

Report Date: July 5, 2021

There shall be one report for each play structure or functionally linked play structures and for each type of surface material. Each test shall comprise of a minimum of 3 impact locations per playspace or type of surfacing material with three drops from the same height to the same point. The report shall be descriptive enough to assist the user of the report in determining compliance with contracts and Standards. The ASTM F1292-17a, F3313, CSA Z614-20, AS4422-2016, and CPSC doc 325 set minimum values as the Gmax shall not exceed 200 and the HIC shall not exceed 1000 from the drop height stipulated by the owner/operator prior to purchase.

Agency requesting the tests		Mount Pleasant Village		Manufacturer/Supplier/Installer of Surface	
Everplay Installation Inc		Evos Structure		Everplay Installation Inc.	
#12 – 18 Automatic Rd.		Commuter Drive		#12 – 18 Automatic Rd.	
Brampton	Ontario	Brampton	Ontario	Brampton	Ontario
L6S 5N5	Canada		Canada	L6S 5N5	Canada
Henry Helps				Henry Helps	
416-410-3056				416-410-3056	

Date of test:	05-07-21	Test apparatus s/n:	30-11314	Triax2010 ☐ Touch ☒	Training Certificate #	C004
Description of surface(s):	EPDM checkerboard poured-in-place surface					
Type:	unitary	Product name:	EVERPLAY	Date installed:	Nov. 2010	Critical height: >4M (13')
Thickness of surface material:	maximum:	150mm (6")	Minimum:	150mm (6")	average:	150mm (6")
Accessible route	Width met	Yes ☒ No ☐	Running slope met	Yes ☒ No ☐	Cross Slope met	Yes ☒ No ☐
Seams:	At colour changes	gaps:	no	level:	yes	
Fasteners:	no	type:		condition:	na	
PS Zone met	yes	Failures at	none			
Weather condition of test:	Sunny and hot	frozen:	no	dry:	yes	wet: no
Surface condition;	Excellent, after 11 years not changes					
Temperature: ambient air:	35C (95F)	surface temperature at the lesser of 1" or 50% of the depth of the surface:	45C (113F)			
Reference pretest drops completed:	yes	Gmax within 5% of nominal Gmax:	less than or equal to 5%			
Mats, walkways or ramps;	no	number:	na	condition:	na	requires impact test: no
Pictures (file names); general playground	See each drop	test locations:	As directed by client			

ASTM F1292 stipulates that the drop height for each test location shall be the greater of the critical height for the surface material, the fall height for the play structure as stated in the relevant playground Standard or the height specified by the owner/operator prior to purchase. The drop height is physically measured. The drops are performed from the same drop height to the same point on the surface.

Drop #	Drop height	Drop location in relation to structure	Thickness	Picture	Velocity cm/sec	Gmax	HIC
1	3.8m	North side of Evos arch east of net	150mm	121300	869	89	680
2	(12.5')				857	88	637
3					862	85	581
Av. 2&3						87	609
1	3.8m	North side of Evos, west of ring climbers	150mm	121882	862	72	516
2	(12.5')				862	73	513
3					862	72	497
Av. 2&3						73	505
1	3.5m	Between loop and ladder overhead climber	150mm	123142	832	80	518
2					828	81	543
3					828	80	510
Av. 2&3						81	527

The results herein reflect the performance of the tested playground surface at the time of testing and at the temperature(s) and ambient conditions reported. Performance will vary with temperature, moisture content and other factors.

Test performed by:	Rolf Huber	Authorized signature:	

EVERPLAY™
play and recreation surfaces

Protective Playground
Surface Test Report Gallery

Brampton, Ontario
JULY 25TH 2021

PHOTO: 122646.JPG

PHOTO: 121822.JPG

PHOTO: 121300.JPG

1097 West River Rd., Cambridge, Ontario, Canada, N1R 5S5
Tel: 416-410-7506 Fax: 519-267-3802

Protective Playground Surface Test Report

Report Date: 07-29-2021

There shall be one report for each play structure or functionally linked play structures and for each type of surface material. Each test shall comprise of a minimum of 3 impact locations per playspace or type of surfacing material with three drops from the same height to the same point. The report shall be descriptive enough to assist the user of the report in determining compliance with contracts and Standards. The ASTM F1292-17a, F3313, CSA Z614-20, AS4422-2016, and CPSC doc 325 set minimum values as the Gmax shall not exceed 200 and the HIC shall not exceed 1000 from the drop height stipulated by the owner/operator prior to purchase.

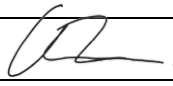
Agency requesting the tests		Sr. Composite Structure 2 - Galaxy		Manufacturer/Supplier/Installer of Surface	
Everplay Installation Inc.		Big Park – Regent Park Playground		Everplay Installation Inc.	
#12-18 Automatic Rd.		415 Gerrard St. East		#12-18 Automatic Rd	
Brampton	Ontario	Toronto	Ontario	Brampton	Ontario
L6S-5N5	CANADA	M5A-2H4	CANADA	L6S-5N5	Canada
Henry Helps		Unknown		Henry Helps	
416-410-3056		Unknown		416-410-3056	

Date of test:	07-29-2021	Test apparatus s/n:	30-10319	Triax2010 ☐ 2015 ☒	Training Certificate #	C946
Description of surface(s):	New Poured In Place					
Type:	Unitary	Product name:	Everplay	Date installed:	2012	Critical height: >2.90m
Thickness of surface material:	maximum:	140mm	Minimum:	140mm	average:	140mm
Accessible route	Width met	Yes ☒ No ☐	Running slope met	Yes☐ No☐	Cross Slope met	Yes ☐ No ☐
Seams:	no	gaps:	no	level:	yes	
Fasteners:	no	type: N/A	condition:	N/A	PS Zone met	yes
Failures at	None					
Weather condition of test:	Warm, Cloudy, Dry, Calm	frozen:	no	dry:	yes	wet: no
Surface condition;	Good					
Temperature: ambient air:	23C	surface temperature at the lesser of 1" or 50% of the depth of the surface:	24C			
Reference pretest drops completed:	yes	Gmax within 5% of nominal Gmax:	less than or equal to 5%			
Mats, walkways or ramps;	no	number:	N/A	condition:	N/A	requires impact test: no
Pictures (file names); general playground	See each drop	test locations:	As directed by client			

ASTM F1292 stipulates that the drop height for each test location shall be the greater of the critical height for the surface material, the fall height for the play structure as stated in the relevant playground Standard or the height specified by the owner/operator prior to purchase. The drop height is physically measured. The drops are performed from the same drop height to the same point on the surface.

Drop #	Drop height	Drop location in relation to structure	Thickness	Picture	Velocity cm/sec	Gmax	HIC
1	2.44m	At Slide	140mm	20210729_143448	696	63	329
2					696	63	317
3					695	62	308
Av. 2&3						63	313
1	2.85m	At Spinner with Bar	140mm	20210729_144248	750	90	529
2					751	87	495
3					750	90	514
Av. 2&3						89	505
1	2.90m	At Spinner with Platform	140mm	20210729_144633	757	88	504
2					758	85	463
3					758	86	474
Av. 2&3						86	469

The results herein reflect the performance of the tested playground surface at the time of testing and at the temperature(s) and ambient conditions reported. Performance will vary with temperature, moisture content and other factors.

Test performed by:	Adam Huber	Authorized signature:	

EVERPLAY™
play and recreation surfaces

Protective Playground
Surface Test Report Gallery

Toronto Regent Park, Ontario
JULY 29th 2021

PHOTO: 20210729_140412.jpg

PHOTO: 20210729_140436.jpg

PHOTO: 20210729_140457.jpg

1097 West River Rd., Cambridge, Ontario, Canada, N1R 5S5
Tel: 416-410-7506 Fax: 519-267-3802

Protective Playground Surface Test Report

Report Date: 07-29-2021

There shall be one report for each play structure or functionally linked play structures and for each type of surface material. Each test shall comprise of a minimum of 3 impact locations per playspace or type of surfacing material with three drops from the same height to the same point. The report shall be descriptive enough to assist the user of the report in determining compliance with contracts and Standards. The ASTM F1292-17a, F3313, CSA Z614-20, AS4422-2016, and CPSC doc 325 set minimum values as the Gmax shall not exceed 200 and the HIC shall not exceed 1000 from the drop height stipulated by the owner/operator prior to purchase.

Agency requesting the tests		Sr. Composite Structure		Manufacturer/Supplier/Installer of Surface	
Everplay Installation Inc.		Big Park – Regent Park Playground		Everplay Installation Inc.	
#12-18 Automatic Rd.		415 Gerrard St. East		#12-18 Automatic Rd	
Brampton	Ontario	Toronto	Ontario	Brampton	Ontario
L6S-5N5	CANADA	M5A-2H4	CANADA	L6S-5N5	Canada
Henry Helps		Unknown		Henry Helps	
416-410-3056		Unknown		416-410-3056	

Date of test:	07-29-2021	Test apparatus s/n:	30-10319	Triax2010 ☐ 2015 ☒	Training Certificate #	C946	
Description of surface(s):	New Poured In Place						
Type:	Unitary	Product name:	Everplay	Date installed:	2012	Critical height:	>3.40m
Thickness of surface material:	maximum:	140mm	Minimum:	140mm	average:	140mm	
Accessible route	Width met	Yes ☒ No ☐	Running slope met	Yes☐ No☐	Cross Slope met	Yes ☐ No ☐	
Seams:	no	gaps:	no	level:	yes		
Fasteners:	no	type:	N/A	condition:	N/A	PS Zone met	yes
Failures at	None						
Weather condition of test:	Warm, Cloudy, Dry, Calm	frozen:	no	dry:	yes	wet:	no
Surface condition;	Good						
Temperature: ambient air:	23C	surface temperature at the lesser of 1" or 50% of the depth of the surface:	24C				
Reference pretest drops completed:	yes	Gmax within 5% of nominal Gmax:	less than or equal to 5%				
Mats, walkways or ramps;	no	number:	N/A	condition:	N/A	requires impact test:	no
Pictures (file names); general playground	See each drop	test locations:	As directed by client				

ASTM F1292 stipulates that the drop height for each test location shall be the greater of the critical height for the surface material, the fall height for the play structure as stated in the relevant playground Standard or the height specified by the owner/operator prior to purchase. The drop height is physically measured. The drops are performed from the same drop height to the same point on the surface.

Drop #	Drop height	Drop location in relation to structure	Thickness	Picture	Velocity cm/sec	Gmax	HIC
1	3.40m	West Side at Hand Over Hand	140mm	20210729_133912	820	94	652
2					821	94	635
3					820	94	622
Av. 2&3						94	629
1	3.40m	South East side of slide	140mm	20210729_134734	821	101	688
2					821	99	654
3					820	101	673
Av. 2&3						100	664
1	3.40m	North Side of Climbing Wall	140mm	Picture Not Found	820	96	630
2					820	92	595
3					822	89	568
Av. 2&3						91	582

The results herein reflect the performance of the tested playground surface at the time of testing and at the temperature(s) and ambient conditions reported. Performance will vary with temperature, moisture content and other factors.

Test performed by:	Adam Huber	Authorized signature:	

EVERPLAY™
play and recreation surfaces

Protective Playground
Surface Test Report Gallery

Brampton, Ontario
JULY 29th 2021

PHOTO: 20210729_140230.jpg

PHOTO: 20210729_140248.jpg

Specifications for CSA Z614
Clause 10 Protective Surfacing

The owner/operator (O/O) is obligated to provide a protective surface that prevents serious and life-threatening injuries from a fall from the play structure to the protective surface. Some O/Os offer to provide significant better protection from injury severity as stated in their organizational Health and Safety Policies. CSA Z614-20, sets only minimum with Clause 10.1 providing that the surface shall not impart a linear acceleration exceeding 200g or a HIC (head injury criteria) value greater than 1000 with the testing being the procedure in ASTM F1292-99. Since 1999, the ASTM F1292, which is the original 3 temperature test, evolved to include a field test procedure. This field test has further evolved to be exclusively in ASTM F3313. Reference to testing in the field to ASTM F1292 or F3313 are interchangeable. This Standard encourages the O/O or their specifier to select drop heights for testing to be higher than the equipment fall height and select values for g and HIC that are lower than the limits of the standards to enhance injury protection and better asset management.

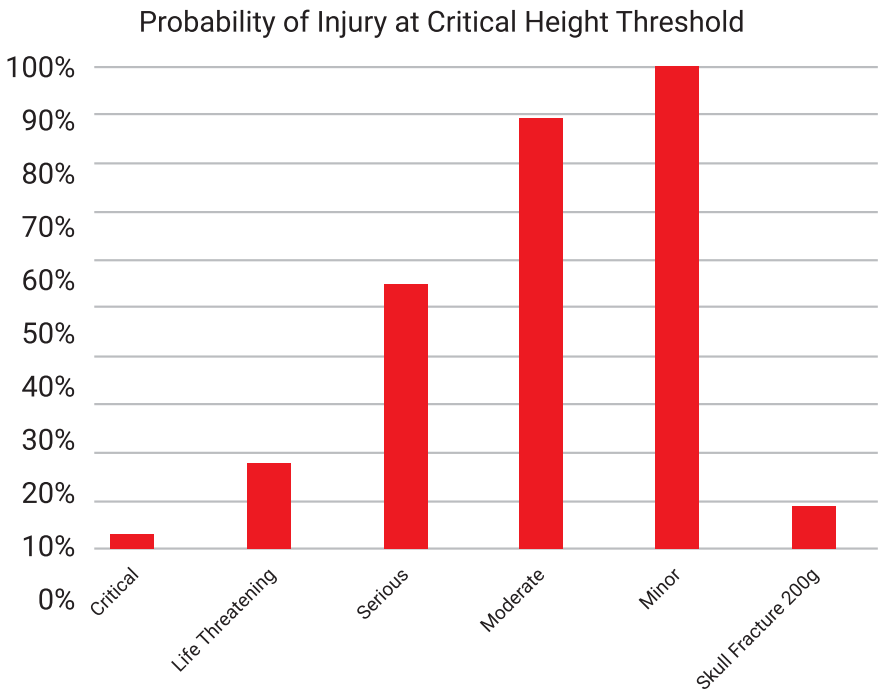
Clause 10.2 of the Z614-20 recommends that owner/operators should request a copy of the 3-temperature test for surfacing. The original 3-temperature test is ASTM F1292 and provides the critical height or the height at which the surface fails and needs to be replaced according to Z614, Clause 10.4.7. Recently ASTM has published a new Standard ASTM F3351, Standard Test Method for Playground Surface Impact Testing in Laboratory at Specified Test Height. This standard allows for a request with the submissions from surfacing suppliers to demonstrate their ability to perform better than the minimum requirements and at heights that reflect where children are likely to climb or to ensure many more years of functional longevity for the surfacing asset. To utilize this standard, the specifier must request the drop height and associated acceptable g and HIC values.

This document can be used by a specifier for any synthetic surface system. The submittals generally apply to all surface systems. For some systems, the base preparation will be different, such a tiles or mats with legs where a concrete or asphaltic surface is required to support the legs over the long-term. Inclusion of drainage systems will be determined by local conditions for soil, quantity of precipitation, winter snow melt, etc.

In determining injury prevention in relation to the "safety" strategies that an owner might have, the following provides the anticipated level of injury that can occur at the minimum protection values for the g and HIC limits of the Z614. The O/O must decide if these values or better performance is acceptable.

"Limiting the HIC value to a maximum of 1000 is equivalent to a 3% chance of a critical head injury (MAIS 5), an 18% probability of a severe (MAIS 4) head injury, a 55% probability of a serious (MAIS 3) head injury, a 89% probability of a moderate head injury (MAIS 2), and a 99.5% change of a minor head injury (MAIS 2), the average male adult." (CEN En1177:2018)

The value of 200g is a 10% risk of skull fracture. (ASTM F08.65)



Specifications for CSA Z614
Clause 10 Protective Surfacing

General

This surface is to provide functional impact attenuation and durability, meeting the performance requirements CSA Z614-20 at the time of installation and throughout the functional life of the playground. Impact testing will be performed at the time of installation and each year during the 5-year warranty period and periodically into the future at the discretion of the O/O.

Where applicable the surface must also meet all the ground level surface requirements for accessibility as required in CSA Z614-20, Annex H. These are physical tests that will be performed at the time of installation and throughout the warranty period.

Reference Standards.

ASTM D2859 – *Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials*

ASTM F355 – *Standard Test Method for Impact Attenuation of Playing Surface Systems, Other Protective Sport Systems, and Materials Used for Athletics, Recreation and Play*

ASTM F1292 – *Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment*

ASTM F1551 – *Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials*

ASTM F2157 – *Standard Specification for Synthetic Surfaced Running Tracks*

ASTM F2479 – *Standard Guide for Specification, Purchase, Installation and Maintenance of Poured-In-Place Playground Surfacing*

ASTM F3313 – *Standard Test Method for Determining Impact Attenuation of Playground Surfaces Within the Use Zone of Playground Equipment as Tested in the Field*

ASTM F3351 – Standard Test Method for Playground Surface Impact Testing in Laboratory at Specified Test Height

CAN/CSA Z614 – *Children's playground equipment and surfacing*

CAN/CSA Z614, Annex H – *Children's playgrounds and equipment that are accessible to persons with disabilities*

US Consumer Product Safety Commission (CPSC), Handbook for Public Playground Safety

Specifications for CSA Z614
Clause 10 Protective Surfacing

Defintions

The definitions provided for in the CSA Z614 and various ASTM standards will be the definitions used in this specification.

Submittals at time of proposal

Submittals help outline and confirm the performance requirements for the Protective Surfacing.

Supplier Specification for the Protective Surfacing System and must include statements of,

- Injury prevention performance in relation to the intended age groups for the play structures, such as g<100 and HIC <570 for structures intended for children under 5 or HIC <700 for structures intended for children 5-12 years. (These HIC values are taken from North American Automobile requirements as set minimums)
- Sub-base and drainage requirements
- Determination of thickness of surface, whether there is a minimum thickness that is increased based on impact performance requirements
- General description of the installation procedure
- Constraints for successful installation including limits for temperature and humidity
- Statement of treatment for bevels and transitions to other materials
- Detail of any requirements for perimeter materials such as curbs and sidewalks
- Warranty - stating number of years, compliance with performance, remedies and any exclusions
- List of open warranty claims either in resolution or subject to dispute.

Certificate from the polyurethane supplier and system supplier,

- That the polyurethane is the same formula as used in the samples for testing to ASTM F3351
- That the polyurethane is intended for outdoor play and recreation surfaces and is UV stable with exposure to UV not detrimentally affecting the impact attenuation of the installed surface.
- The polyurethane must not contain latex

Certificates from a third-party laboratory for the 3 temperature ASTM F335,

- The drop heights of 4.25m, 4.9m (14’ & 16’) indicating a g value not exceeding 100 and HIC value not exceeding 700.
- The drop height of 5.5 (18’) indicating a g value not exceeding 110 and HIC value not exceeding 710.
- Attestation that the binder, system components and installation technique utilized in the sample are consistent with the surface to be installed.
- The test certificate is not older than 5 years.

Maintenance procedures for the system,

Qualifications for the crew leader and senior crew member indicating a minimum of 10 years’ experience.

Test results to the field test in ASTM F1292-17 or earlier or ASTM F3313 for projects that at older than10 years and indicate compliance to the performance stated in the warranty requirements.

Shop drawings for any details not included in the supplier specification.

Third party certificate for Testing to D2859 indicating a pass with no combustion propagation.

Specifications for CSA Z614
Clause 10 Protective Surfacing

Submittals following award of Contract

Requirements for insurance, Workers Compensation and other local regulations as stated in the general conditions of the contract documents.

Testing and Inspections

Following the installation of the system and at a time when the systems are fully cured, the surface system will be inspected for the following,

- Compliance for impact attenuation that the installed surface provides a g value <100 and HIC value <570 for structures intended for children under 5 years and <700 for structures intended for children 5-12 years.
- The drop height will be the highest fall height within a play structure, any designated play surface accessible to play and any height that the contract documents have stipulated prior to purchase.
- The testing is to be performed to the procedure in ASTM F3313, utilizing the Triax2010, Triax2015, or TriaxTouch, within two years of calibration and performance confirm with the performance of eference drops. The person performing the testing will be suitably trained by a competent body, as per ASTM standards.

Annually and at least 60 days prior to the end of the warranty, the same testing will be performed from the same drop heights and the g value will be allowed to increase to 120g and the HIC value will be allow to increase to 700 for structures intended for children under 5 and 850 for structures intended for children 5-12 years.

Failures for impact attenuation will require the determination of the extent of the failure across the surface and that area is to be replaced at no cost to the owner.

At the conclusion of the installation, the surface system that is designated to be accessible and compliant with Annex H will be inspected and any failures will be brought into compliance at no cost to the owner.

Colours

Each surface system will have standard colours, augmented with special colours, and textures that the specifier will select with the appropriate description.

Coordination

The protective surfacing provider will cooperate and coordinate their work with those responsible for the installation of play structures, base materials, and surrounding surfaces. This coordination will extend to the provision of protection of the various component from damage by contractors or the public.

Protective Surfacing Installation

Base options – depending upon the choice of surfacing systems, poured-in-place and synthetic turf generally are installed on compacted granular, while tiles or mats are generally installed on concrete or asphalt to provide support to the leg or station system.

Specifications for CSA Z614
Clause 10 Protective Surfacing

Granular base shall be as per the supplier specification with adjustment for local conditions, including drainage. The granular material shall not be High Performance Bedding (HPB) since wheelbarrows and foot traffic during installation will damage the base. The supplier of the granular base shall provide compaction test data that the base meets the compaction required in the specification. Prior to installation of the protective surfacing system, the surfacing supplier shall provide an attestation that the surfacing system by type, grade, and planarity are suitable to the surface being installed and this shall not be a fault to the surfacing warranty unless there is a catastrophic failure of the base such as a washout, skink hole, etc. The attestation shall also include that the drainage or removal of water is suitable for the system to be installed.

Concrete shall be a minimum of 80mm (3”) thick and meet the local requirements for mix and strength for sidewalks. The concrete shall be sloped to perimeter drains or area drains set within the play area. Care must be taken to ensure there are not dams or blockages installed during the installation of perimeter features or the surface system that would detrimentally affect the flow of water.

Protective Surface System – Poured-In-Place

The surfacing installer shall prime any surfaces that are identified for priming in their specification. They shall also provide a geotextile (Terrafix 200R or equivalent) as a separation between the poured-in-place system and the granular base.

The poured-in-place system shall be installed in a minimum of 2 layers, a cushion and wear layer, with the thickness for each determined by the supplier to meet the impact attenuation performance of this specification. All layers of the system will have polyurethane binder with no loose rubber being allowed. The installed surface shall provide a g value not exceeding 100 or HIC value exceeding 570 for structures intended for children under 5 and not exceeding 700 for structures intended for children 5-12 years old. The drop height for testing shall at a minimum be the fall heights for the CSA Z614, the highest designated play surface accessible to play and the tops of any structures intended for climbing.

The poured-in-place wear layer must be,

- Seamless, particularly across designs or changes of colours
- Slip-resistant
- Vandal resistant
- Utilize a UV resistant binder
- 100% rubber granules (recycled tires for pigmented surfaces and EPDM for full colour surfaces)

Transitions shall be smooth and meet CSA Z614, Annex H. Where the surface transitions to Engineered Wood Fiber (EWF), the transition shall be as recommended in ASTM F2479.

Cleaning

The surfacing supplier shall ensure that the area is clean and free of any coating or materials used during the installation.

Warranty

The warranty is for a minimum of 5 years and shall provide for repairs or replacement at no cost to the owner for any failures to the requirements of impact attenuation or materials and workmanship other than acts of God or vandalism. Failures shall include, but not be limited to seam separation, gaps, cracks, and changes in vertical height not related to failure of the sub-base.

EVERPLAY™

play and recreation surfaces

JUST NO *Equal*

'Now You Know'

EVERPLAY Installation Inc.
18 Automatic Road
Unit 12
Brampton Ontario, Canada
L6S 5N5
888-EVERPLAY

www.everplay.com