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Testing Playground Surfaces to the Requirements of ASTM F1292 & F3313

ASTM F1292, Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment, has been established as the test required in playground standards, guidelines and regulations in North America and around the world. In most cases the testing will have legal ramifications either in relation to compliance to contract specifications and warranties or needed as supporting information in a law suit as a result of an injury or as a result of a request by a government agency.

ASTM F1292 was first published in 1991 and most current revision being used in the field are either the ASTM F1292-99 or the ASTM F1292-09, which is very similar to ASTM F1292-04. Some of the procedures will vary depending upon which revision is quoted. A major change between to two revisions is the length of time allowed between calibrations. For the 1999 revision the Triax2000 must be calibrated annually, whereas the 2004 and 2009 all calibration to be every two years. This can be confirmed by attaching a copy of the calibration certificate to the test report. These differences will be highlighted.

The following can act as a check list for the person performing, requesting or reading a report related to a field test and to determine completeness and accuracy. There will be a list of requirements, followed by best practices.

Common requirements

1. Copy of the calibration certificate for Triax device from Alpha-Automation, Inc.
2. Copy of test operator's training certificate from Canadian Playground Advisory
3. Copy of daily pre-test of three drops, confirm firming that the average of drops 2&3 are within 5% of the location established by the laboratory performing the test. (system integrity check)
4. Date of the test
5. Date of the report
6. Name and manufacture of the test device (Triax2000 or Triax2010)
7. Name of the Laboratory performing the field test
8. Name of the agency requesting the testing
9. Name of the playground site
10. Name of the manufacturer/supplier/installer of the playground surface system
11. Type and description of the surface system being tested

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12. Description or picture of the each play structure and use zone
13. Determine the use zone for each piece of playground equipment and comment
14. Location and description of each drop test location
15. Depth of the surface system being tested
16. Drop height for the test as stipulated by the owner operator prior to purchase
17. Determine and record the ambient air temperature
18. Determine and record the temperature of the playground surface system
    - ASTM F1292-99 – ½" depth or no more than 6" within the system
    - ASTM F1292-04 or 09 – 1" depth or 50%of the depth of the system
19. Determine a minimum of three of the most adverse impact attenuating portions of
    - ASTM F1292-99 each surface system in the playground
    - ASTM F1292-04 or 09 each play structure
20. Determine and the record the location of any fasteners, gaps, or partitions
21. Physically measure and record the drop height for each drop test location
22. Measure and record the velocity of each drop and ensure it is ±0.5 ft/sec from the theoretical.
23. Establish the Triax2000 or Triax2010 in a stable manner to ensure that the 3 drops can be performed from the same drop height to the same test point each time
24. Perform each drop within 1.5 minutes ± 30 seconds and record the Gmax and HIC for each drop.
25. Average, respectively the Gmax and HIC for drops 2 & 3 and record these values as the Gmax and HIC for the drop location
26. Name of the person performing the test, training certificate # and signature

Additional requirements of ASTM F1292-04, 09, 13, 17

1. For loose-fill materials that support compression and interfere with the impact of the headform with the surface system, compact the surface by dropping a 10" x 10" square hand tamper 4 times from 24" ±1"
2. Ensure the angle at the point of impact does not exceed 10 degrees
3. Statement as to whether or not the test sites conformed to the performance specifications of ASTM F1292 or the relevant contract if known.

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4. Statement of specificity; “The result reported 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.”

Additional requirements of ASTM F3313

1. This is a new standard, but totally incorporates the requirements for field testing from ASTM F1292-17
2. Operators shall continue to perform their testing in the same way as they have with ASTM F1292, but change their reference standard to ASTM F3313.

Owner/Operator requirements

1. The owner/operator may request additional impact test sites
2. The owner/operator may establish drop heights determined by their understanding of foreseeable use and risk management provided it is greater than the “fall height” stated in the relevant standard
3. The owner/operator may establish better impact attenuating performance provided the specified performance is better than the requirements of ASTM F1292