# Technical Guidelines

## Brock PowerBase PLAY50
## (PLB50XL)

## Synthetic Base System for Synthetic Turf Playgrounds

---

## Materials, Installation, and Performance Guidelines for Synthetic (Drainage and Impact) Underlayment

***This document does not create any warranty, express or implied. Limited warranties will be established by separate documents provided by the vendors of the respective materials and the installation contractor.***

# Synthetic Base Material and Performance

## Scope:

This document defines requirements for the installation and properties of a playground synthetic base underlayment material as part of a synthetic turf safety surface system. Defined are the primary underlayment requirements for ensuring quality, durability, environmental compatibility, performance and high-capacity subsurface drainage of the installed system.

Specifications listed are defined per applicable ASTM standard test methods or other national or international testing standards. All other specifications and tolerances listed shall be defined under standard ANSI and/or ISO drawing and specification rules.

**Note:** This specification requires prior installation of stabilized subsurface base, including a perimeter foundation-grade concrete curb and means to affix the synthetic turf to the perimeter.

## Part 1: Specification References

1.1 Related Specification Sections

Section 32 18 13: Synthetic Grass Surfacing
Section 32 18 16.13: Playground Protective Surfacing

## Part 2: Testing References

2.1 American Society for Testing and Materials (ASTM), International Standards Organization (ISO), European Committee for Standardization (EN), German Institute for Standardization (DIN), Cradle to Cradle Products Innovation Institute (C2CPII), Environmental Protection Agency (EPA):

| | |
|---|---|
| ASTM F1292-22 | Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment |
| 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 D3575-20, Suffix T | Standard Test Methods for Flexible Cellular Materials Made from Olefin Polymers (Suffix T: Tensile Strength and Elongation) |
| ASTM D3575-20, Suffix D | Standard Test Methods for Flexible Cellular Materials Made from Olefin Polymers (Suffix D: Compressive Strength) |
| EN 12616 | Surfaces for sports areas – Determination of water infiltration rate |
| DIN 53428 | Testing of cellular materials - Determination of the resistance to liquids, vapours, gases and solid materials |

***This document does not create any warranty, express or implied. Limited warranties will be established by separate documents provided by the vendors of the respective materials and the installation contractor.***

| | |
|---|---|
| TSM5725G (modified) | Toyota Method for determination of Coefficient of Linear Thermal Expansion (modified, -30 to 30 °C) |
| FMVSS 302 | Test Procedure for Evaluating Flammability of Interior Materials |
| ASTM F925 (modified) | JSP Method based on ASTM F925 (Test Method for Resistance to Chemicals of Resilient Flooring) |
| EN 14030:2010 | Resistance to Acid and Alkaline Liquids |
| ISO 13438:2004 | Resistance to Oxidation (Accelerating Aging) |
| ASTM G22 | Determining the Resistance of Plastics to Bacteria |
| ASTM G21 | Determining Resistance of Synthetic Materials to Fungi |
| ISO 14001:2015 | Environmental Management Systems |
| ISO 9001:2015 | Quality Management Systems |
| C2CPII | Cradle to Cradle Product Innovation Institute |
| EPA 6010B 7470A, 7471A | Heavy Metals, Mercury |
| EPA 8260B | Volatile Organics Compounds (VOCs) |
| EPA 8270C | Semi-Volatile Organic Compounds (SVOCs) |

## Part 3: Synthetic Turf Underlayment Description

3.1 General Requirements for Underlayment System – An impact energy absorbing sub-base drainage system designed specifically for use with synthetic turf is required. The specified material must have physical, drainage and performance properties that meet the following requirements:

- 3.1.1 Minimum material nominal thickness 50.8 mm (2”) – material thickness must be within ± 2 mm (± 0.08”)
- 3.1.2 Tensile Strength >50 psi (ASTM D3575-20, Suffix T)
- 3.1.3 Tensile Elongation >10% (ASTM D3575-20, Suffix T)
- 3.1.4 Compression Strength >15 psi @ 25% strain (ASTM D3575-20, Suffix D)
- 3.1.5 Water Permeability >1500 in/hr (EN 12616)
- 3.1.6 Linear Thermal Expansion < 0.10 mm /m /°C (TSM5725G – modified, -30 C to 30 C)
- 3.1.7 Material Flammability Flame Spread < 100 mm /min. (FMVSS 302)
- 3.1.8 Material Water Absorption ≤ 2% (vol.) after 24 hr (DIN 53428)

***This document does not create any warranty, express or implied. Limited warranties will be established by separate documents provided by the vendors of the respective materials and the installation contractor.***

3.1.9 Material Resistance to Chemicals ≤ 2 (JSP Method based on ASTM F925)

3.1.10 Material Resistance to Bacteria - no growth (ASTM G22)

3.1.11 Material Resistance to Fungi - no growth (ASTM G21)

<u>Impact Safety Requirement for installed Surface System of Infilled Synthetic Turf and Underlayment:</u>

3.1.12 Surface system must provide average HIC <1,000 upon initial testing of installed playground when tested at the critical fall height (CFH)/critical height (CH) determined in ASTM F1292 testing (ASTM F3313).

## Part 4: Quality Assurance and Guarantees

4.1 Product must be made in ISO accredited facility in the United States of America according to the Federal Trade Commission Made in USA Standard.

4.2 Shock pad must be all white in color to avoid excessive thermal movement due to sunlight exposure during installation.

4.3 Material must be manufactured in an ISO 9000:2015 certified facility.

4.4 Product must be of a homogenous material composition, with a documented chain of custody of all raw materials. Variable content material will not be accepted.

4.5 Manufacturer must provide documentation of material content and pre-approved standard OSHA SDS sheet.

4.6 Material must be covered by a pre-approved and binding 10-year limited product warranty issued by a company in the United States of America. Warranty shall include the provision that manufacturer will deliver to the Owner and install new panels to replace the non-conforming panels. The installation shall include the temporary removal and repair or replacement of the artificial turf and infill over the affected area

4.7 Warranty must not specify monetary limits of liability. Warranty must allow owner a notice period of at least 30 days for non-compliance claims.

4.8 Material must be installed according to manufacturer's instructions, without exceptions.

4.9 Manufacturer must provide written procedures to selected turf supplier or contractor for the installation of turf on top of underlayment.

4.10 Product is to be shipped as flat panels on pre-packaged pallets. Rolled products are not acceptable.

***This document does not create any warranty, express or implied. Limited warranties will be established by separate documents provided by the vendors of the respective materials and the installation contractor.***

## Part 5: Environmental Compatibility

5.1 Product must be manufactured in an ISO 14001:2015 certified facility.

5.2 Product must be Cradle to Cradle™ Certified Bronze (or higher) by the Cradle to Cradle Products Innovation Institute (Material Health Certificate and Product Circularity Certificate, or Full-Scope Certification)

5.3 Product material must not contain concentrations of metals, volatile organic compounds (VOCs), or semi-volatile organic compounds (SVOCs) at concentrations greater than EPA Regional Screening Levels or Department of Toxic Substances Control Human Health Risk Assessment (HHRA) Note 3 thresholds. (EPA 6010B, EPA 7470A EPA 7471A, EPA 8260B, EPA 8270C).

5.4 Product material must not contain leachable concentrations of metals, VOCs, or SVOCs (using the synthetic precipitation leaching procedure) greater than maximum contaminant levels (MCLs) or Regional Water Quality Control Board Environmental Screening Levels for groundwater and surface water - fresh water aquatic habitat. (EPA 60108, EPA 7470A EPA 7471A, EPA 8260B, EPA 8270C).

<u>Additional Requirements for California:</u>

5.5 Product must not contain a chemical on the current California Proposition 65 Safe Drinking Water and Toxic Enforcement Act of 1986 - Update effective 06 JUNE 2014

5.6 Product must not contain concentrations of substances at hazardous waste levels per California Code of Regulations, Title 22, Division 4.5, Chapter 11 – Identification and Listing of Hazardous Waste.

## Part 6: Submittals

6.1 General: Bidding contractor must identify performance base system with bid package. If a non-specified product is identified, the proposed alternate product must be submitted and pre-approved by the design architect/engineer 10 days prior to the bid opening. If bidding contractor does not identify a manufacturer, the Township/School District will assume that the specified product is included in the bid package and will not consider substitutions.

6.2 Product Data: Submit 8.5” x 11” product sample and typical properties sheet.

6.3 Shop Drawings: Submit cross-sectional view showing product installation in relation to sub-base and synthetic turf (including edge attachment).

6.4 Test Data: Submit all applicable test data for compliance to specifications. All testing to be performed following applicable ASTM or other internationally recognized standards and procedures.

6.5 Installation: Submit copy of product installation instructions. Submit copy of installation recommendations.

6.6 Warranty: Submit copy of product 10-Year warranty coverage as specified in 4.6 - 4.7.

***This document does not create any warranty, express or implied. Limited warranties will be established by separate documents provided by the vendors of the respective materials and the installation contractor.***

## Part 7: Products

7.1 Description: Resilient Molded Expanded Polypropylene Base System

7.2 Product: Brock PowerBase PLAY50 (PLB50XL) or pre-approved equal

7.3 Contact Information:
Brock USA LLC
3090 Sterling Circle
Boulder, CO 80301
Telephone: (303) 544-5800
sales@brockusa.com
www.brockusa.com

Ronnie Pascale
National Director of Sales
Telephone: (804) 366-1368
rpascale@brockusa.com

7.4 Manufacturing/Ordering Information:
Brock USA LLC
3090 Sterling Circle
Boulder, CO 80301
Telephone: (303) 544-5800
sales@brockusa.com

7.5 Product format: Interlocking panels
Size: Approximately 73.5 x 49.0 inches (1867 x 1245 mm) overall dimensions
Area: Nominal net coverage per panel of 23.59 $ft^2$ (2.19 $m^2$)
Thickness: 2.0” (50.8 mm) ± 0.08” (2 mm)
Panel Weight: Approximately 5.87 lbs / panel

## Part 8: Product Substitutions

8.1 Product substitutions are allowed only in accordance with pre-bid substitution request procedures outlined in the contract documents. No substitutions will be allowed after the bid date. Bidding contractor must identify performance base system with bid package. If a non-specified product is identified, the proposed alternate product must be submitted and pre-approved by the design architect/engineer 10 days prior to the bid opening. If bidding contractor does not identify a manufacturer, the Township/School District will assume that the specified product is included in the bid package and will not consider substitutions.

## Part 9: Installation

9.1 Per manufacturer’s recommendation - obtain written installation instructions and procedures from the manufacturer.

***This document does not create any warranty, express or implied. Limited warranties will be established by separate documents provided by the vendors of the respective materials and the installation contractor.***

## Part 10: Surplus Material

10.1 Surplus materials to be determined by the Owner prior to order and delivery of product to the installation site. Surplus quantities to be identified in writing by the General Contractor at the time of order placement.

## Part 11: Project Completion

11.1 Upon completion of installation, a walk-through will be conducted to inspect the quality of work and ensure all details meet specifications.

11.2 A punch list of unacceptable or incomplete items will be documented and agreed upon for completion prior to final project closeout and acceptance.

**END OF SECTION**

***This document does not create any warranty, express or implied. Limited warranties will be established by separate documents provided by the vendors of the respective materials and the installation contractor.***