



IATS
INTERNATIONAL
ARTIFICIAL TURF
STANDARD™



May 2009 edition

International Artificial Turf Standard Laboratory Test Report (2009 edition)

Introduction

In February 2004 the International Football Association Board decided to integrate the 'Field Surface' including artificial turf into the "Laws of the Game". Compulsory testing has been adopted for artificial turf to be used in competition matches between representative teams of National Associations affiliated to FIFA and international club competition matches. The Law I of the Game requires that artificial surfaces (Football Turf) be tested according to a stringent set of requirements and certified to either the FIFA *Quality Concept for Football Turf* or the *International Artificial Turf Standard* (IATS).

The FIFA *Quality Concept for Football Turf* and IATS include a series of laboratory tests that are designed to assess performance and durability of the synthetic materials that form the Football Turf and, most importantly, an assessment of individual football fields to ensure they have the playing and performance characteristics players will expect from a facility certified by FIFA. The *International Artificial Turf Standard* and FIFA Recommended 1 Star are technically identical and all the testing procedures and requirements of a FIFA Recommended 1 Star certified field also apply to IATS fields.

Official testing to the *International Artificial Turf Standard* shall only be carried out by independent test institutes accredited by FIFA.

The *International Artificial Turf Standard* is not a product approval scheme but is the certification that individual football fields have the required playing characteristics and have been constructed from materials of known quality.

This laboratory test report does not confirm or imply FIFA approval of the Football Turf product described within it. FIFA only certify individual fields that have been independently tested and shown to fully satisfy the requirements of the IATS or *FIFA Quality Concept for Football Turf*

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IATS Laboratory Test Report

This is the official IATS Laboratory Test Report for the product detailed in Section 1. The report gives the results of the laboratory tests carried out on samples of the Football Turf. The report contains nine sections. Sections one to five are completed by the manufacturer of the Football Turf and give information about the Football Turf product. Sections six to nine are completed by the FIFA accredited test laboratory and detail the results of the laboratory tests.

This test report is not valid unless it is reproduced in its entirety. The results are valid only for the complete Football Turf system described in the report.

Use of this report

This IATS laboratory test report may only be used in relationship to Football Turf fields that are going to be submitted for certification under the IATS. Any other use of this report is a violation of the report's copy write which is held by FIFA.

| Section 1 - Product Details | |
|-----------------------------|--|
| Surface name | |
| Carpet name | |
| Performance infill | |

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| | | | | |
|----------------------------------|----------|--|-------------------|--|
| Stabilising infill | | | | |
| Shockpad or e-layer | | | | |
| Base on which tests were be made | Concrete | | Unbound aggregate | |

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| Section 2 – Football Turf manufacturer details | |
|--|--|
| Manufacturer / supplier | |
| Address | |
| Tel. | |
| Fax. | |
| Email | |
| Web | |

| Section 3 – product information | | | | |
|---------------------------------|---------------------------------|--------|--------|--------|
| Artificial Turf | Manufacturer | | | |
| | Tuft pattern | | | |
| | Pile yarn | Yarn A | Yarn B | Yarn C |
| | Manufacturer | | | |
| | Product name / code | | | |
| | Pile yarn profile | | | |
| | Pile length (mm) | | | |
| | Pile weight (g/m ²) | | | |
| | Pile width (mm) | | | |
| | No of tufts / m ² | | | |
| | Pile thickness (micron) | | | |
| | Pile colour (RAL No) | | | |

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| | | | | |
|--------------------|--|---------------------------------|--|--|
| Artificial Turf | Primary turf backing product name / code | | | |
| | Primary turf backing manufacturer | | | |
| | Reinforcement scrim product name / code | | | |
| | Reinforcement scrim manufacturer | | | |
| | Secondary backing (coating) product name / code | | | |
| | Secondary backing (coating) manufacturer | | | |
| | Secondary backing (coating) dry application rate (g/m ²) | | | |
| | Method of jointing | | | |
| | Bonded joints | Adhesive brand name | | |
| | | Adhesive manufacturer | | |
| | | Application rate (g/lm) | | |
| | | Jointing film brand name | | |
| | | Jointing film manufacturer | | |
| | Stitched seams | Tread brand name / product code | | |
| Tread manufacturer | | | | |
| Stitch rate per lm | | | | |
| | | | | |
| Performance infill | Product name / code | | | |
| | Manufacturer | | | |
| | Material type | | | |
| | Material grading | | | |
| | Material shape | | | |
| | Application rate (g/m ²) | | | |

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| | | |
|--|---|--|
| Stabilising infill | Product name / code | |
| | Manufacturer | |
| | Material type | |
| | Material grading | |
| | Material shape | |
| | Application rate (g/m ²) | |
| | | |
| Shockpad (when supplied as part of system) | Product name / code | |
| | Composition (type, rubber granule grading, binder content, etc) | |
| | Thickness (mm) | |
| | Nominal mass per unit area (kg/m ²) | |

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Section 4 – Recommended Maintenance Equipment

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| Section 5 – Product reference information | | | | | | | |
|---|---|-------------|---------------|--------------------------------|-------------|--------|--|
| Component | Property | Test Method | Specification | Property | Test Method | | |
| Artificial turf | Carpet mass per unit area (g/m ²) | ISO 8543 | | Tufts / m ² | ISO 1763 | | |
| | Minimum tuft withdrawal force (N) | ISO 4919 | | Pile length above backing (mm) | ISO 2549 | | |
| | Total pile weight (g/m ²) | ISO 8543 | | | | | |
| | Pile yarn characterisation | Yarn A | | Yarn B | | Yarn C | |
| | | | | | | | |
| Pile yarn dtex | | | | | | | |

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| Component | Property | Test Method | Specification | Property | Test Method | |
|--------------------|-----------------------------------|-----------------|---------------|----------------|-------------|--|
| Performance infill | Particle size (range) | EN 933 - Part 1 | | Particle shape | prEN 14955 | |
| | Bulk density (g/cm ³) | EN 1097-3 | | Material type | | |

| Component | Property | Test Method | Specification | Property | Test Method | |
|--------------------|-----------------------------------|-----------------|---------------|----------------|-------------|--|
| Stabilising infill | Particle size (range) | EN 933 - Part 1 | | Particle shape | prEN 14955 | |
| | Bulk density (g/cm ³) | EN 1097-3 | | Material type | | |

| Component | Property | Test Method | Specification | Property | Test Method | |
|-----------|-------------|-------------|---------------|------------------|-------------|--|
| Shockpad | Thickness | EN 1969 | | Shock absorption | EN 14808 | |
| | Deformation | EN 14809 | | | | |

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| Section 6 – Laboratory tests results | | | | |
|---|------------------------------------|-----------------|--------|-------------|
| Ball / surface interaction | | | | |
| Property | Test condition | Specified range | Result | Pass / fail |
| Vertical ball rebound | Dry | 0.6 m – 1.0 m | | |
| | Wet | | | |
| | After 20,200 cycles simulated wear | | | |
| Angle ball rebound | Dry | 45 % - 70 % | | |
| | Wet | 45 % - 80 % | | |
| Ball roll | Dry | 4 m – 10 m | | |
| | Wet | | | |
| Player / surface interaction | | | | |
| Shock absorption | Dry | 55 % - 70 % | | |
| | Wet | | | |
| | After 20,200 cycles simulated wear | | | |
| | -5°C ⁽¹⁾ | | | |
| | 40°C | | | |
| Deformation | Dry | 4 mm – 9 mm | | |
| | Wet | | | |
| | After 20,200 cycles simulated wear | | | |

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| Property | Test condition | Specified range | Result | Pass / fail |
|---|----------------|-------------------------|--------|-------------|
| Linear friction Stud deceleration value | Dry | 3.0 g – 6.0 g | | |
| | Wet | | | |
| Linear friction Stud slide value | Dry | 120 – 220 | | |
| | Wet | | | |
| Skin / surface friction | Dry | 0.35 μ – 0.75 μ | | |
| Skin abrasion | Dry | \pm 30 % | | |

Effects of artificial weathering

| Property | Aspect | Requirement | Result | Pass / fail |
|-------------------|------------------------------|---------------------|--------|-------------|
| Pile yarn (s) | Colour change | \geq Grey scale 3 | | |
| | Yarn tensile strength | % change \leq 50% | | |
| Polymeric infills | Colour change | \geq Grey scale 3 | | |
| | Visual change in composition | No change | | |

Miscellaneous

| Property | Requirement | Condition | Result | Pass / fail |
|---------------------------------------|---------------------|------------|--------|-------------|
| Joint strength | \geq 1000 N/100mm | Unaged | | |
| | | Water aged | | |
| | \geq 25 N/100mm | Unaged | | |
| | | Water aged | | |
| Water permeability of complete system | >180 mm/h | N/A | | |

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| Property | Requirement | Condition | Result | Pass / fail |
|-------------------------------------|-----------------|------------|--------|-------------|
| Tensile strength of shock / e-layer | ≥ 0.15 MPa | Unaged | | |
| Carpet tuft withdrawal | ≥ 30 N | Unaged | | |
| | | Water aged | | |

| Product Identification | | | | | |
|---|------------------------------|-------------|--|--|--|
| Artificial turf | Mass per unit area | | | | |
| | Tufts per unit area | | | | |
| | Pile length above backing | | | | |
| | Pile weight | | | | |
| | Water permeability of carpet | | | | |
| Performance infill | Particle size range | | | | |
| | Particle shape | | | | |
| | Bulk density | | | | |
| | Thermo-gravimetric analysis | % organic | | | |
| | | % inorganic | | | |
| Stabilising infill | Particle size range | | | | |
| | Particle shape | | | | |
| | Bulk density | | | | |
| Shockpad or e-layer (if supplied as part of system) | Shock Absorption | | | | |
| | Deformation | | | | |
| | Thickness | | | | |

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DSC scan(s) of pile yarn(s)

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Performance infill particle grading curve

Stabilising infill particle grading curve

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Composition of unbound sub-base (if tested as part of system)

| | |
|--------------------------|--|
| Composition | |
| Particle size range | |
| Particle shape | |
| Thickness | |
| Compaction & test method | |

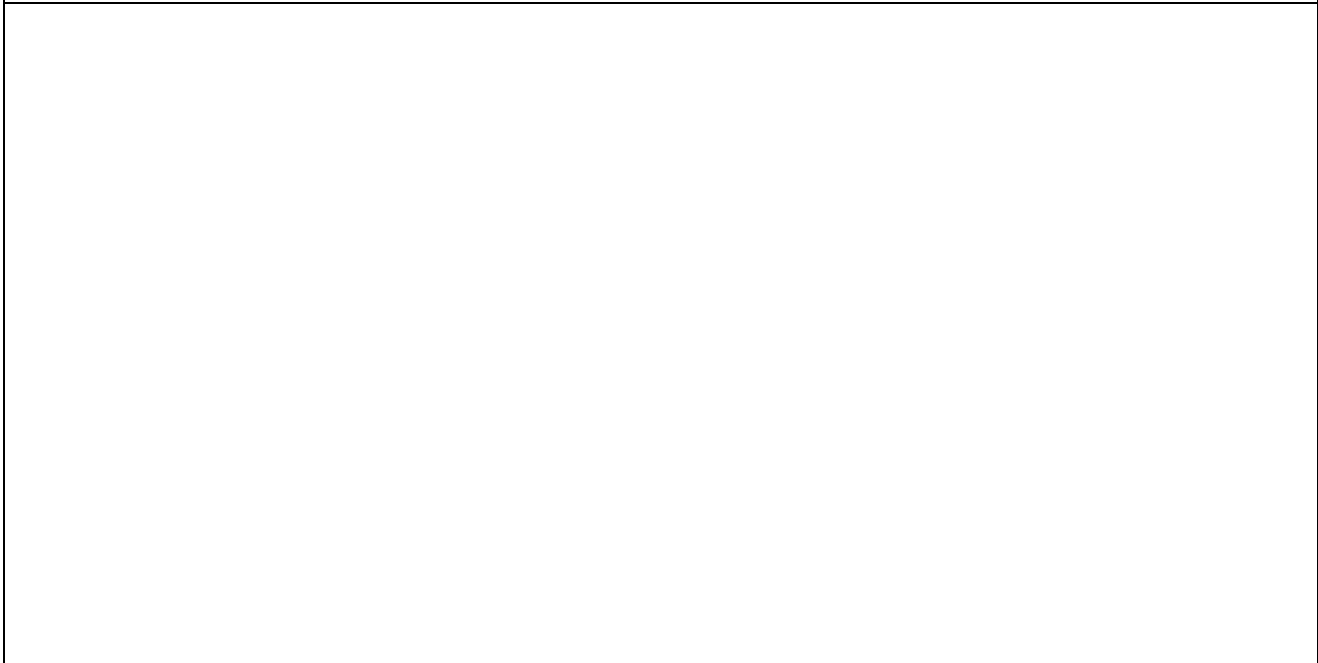
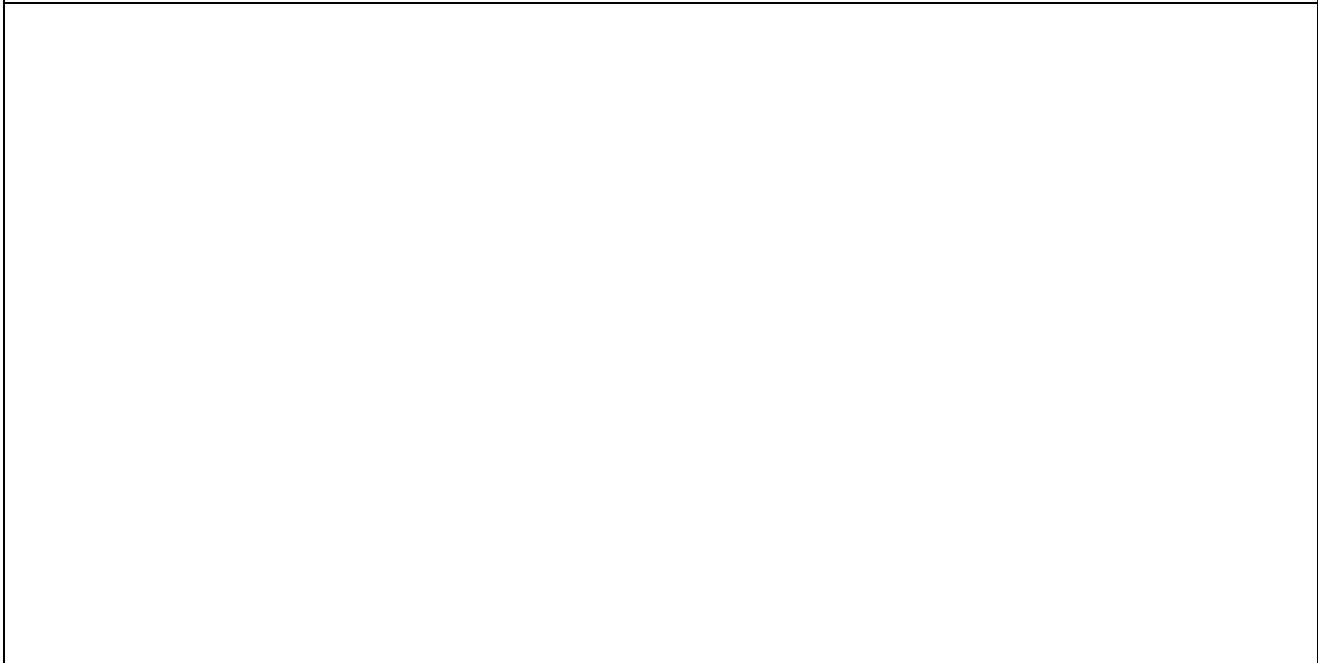
Sub-base particle grading curve

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Photographs showing the effects of simulated wear



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| | |
|---------------------------------------|--|
| Section 7 – Laboratory details | |
| Test Laboratory | |
| Address | |

| | |
|-----------------------------------|--|
| Section 8 – Report details | |
| Report prepared by (signature) | |
| Name | |
| Report approved by (signature) | |
| Name and position | |
| Date | |

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IATS Field Tests

Information for applicants

1 Information to be submitted to FIFA in advance of a field test

A field test may be requested by the manufacturer that supplied the football turf surface, the contractor that built the field or the owner/operator of the field.

To request a field test the applicant must obtain an IATS Field Test Report Number from FIFA and complete Section One of this report before sending it to their appointed FIFA accredited test Institute. When requesting an IATS Field Test Report Number the licensee shall provide the following information to FIFA:

- Stadium or site name and address
- Product name and code of the installed Football Turf
- Test Institute appointed to undertake the field test - the Test Institute shall not have been involved in the design, specification or procurement of the field.
- Proposed date of the field test (tests should normally be made within four weeks of the proposed date)
- Names of the ground staff responsible for maintaining the field and for Initial Field Tests details of all training (including dates) they have undertaken in relationship to the maintenance of the football turf

2 Maintenance equipment

During all Field Test the Test Institute is required to audit the equipment provide to maintain the Football Turf surface (including a ball roll ramp) and compare it to the equipment designated by the surface manufacturer. **If the equipment is not available for inspection the field will not be certified by FIFA, irrespective of its performance.** If specialist equipment is required for non-regular maintenance (e.g. decompaction of infill) and this is being undertaken by a specialist company a copy of the maintenance contract and

photographic evidence of the equipment to be used shall be provided to the field test institute.

3 Site samples

A IATS field test also includes a series of laboratory tests to verify the installed materials are the same (within stated tolerances) to those tested previously in the laboratory. To enable these tests to be completed the Test Institute will need the following samples:

- sample of artificial turf measuring at least 1m by 1m
- 5kg each of all infill materials (performance and stabilising)

On receipt of the samples at the laboratory they need to be conditioned prior to test. Applicants are advised that the laboratory tests will normally take at least ten working days to complete.

On any field incorporating a shockpad or e-layer the IATS field test includes measurements of shock absorption and thickness on the shock pad. The applicant is required to ensure the test Institute is able to access the shockpad in each corner of the field to enable these tests to be made. The applicant also has responsibility for ensuring the installation of the shockpad in the four test positions is representative of the whole field.

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Section 1: Site and applicant details

| | | | | | | |
|-------------------------------|--|--|-----------------------|----|-----------------------|--|
| IATS Field Test Report Number | | | | | | |
| Club (if applicable) | | | | | | |
| Address | Stadium or site name | | | | | |
| | | | | | | |
| | City | | | | | |
| | Country | | | | | |
| Stadium or site contact | | | | | | |
| Tel. | | | | | | |
| Email | | | | | | |
| Football Turf installed | | | | | | |
| Date of installation | | | | | | |
| Maintenance details | Maintenance manual supplied to site | Yes | <input type="radio"/> | No | <input type="radio"/> | |
| | Date of maintenance training by Football Turf manufacturer / supplier | | | | | |
| | Names of grounds staff trained | | | | | |
| | | | | | | |
| | | | | | | |
| | Date(s) maintenance equipment supplied to site (as part of the field test the test institute will require this equipment to be available for inspection) : | Tractor Unit | | | | |
| | | Drag Brush | | | | |
| | | Drag Mat | | | | |
| | | Infill materials to top up penalty spot and corner areas | | | | |
| | | Ball roll ramp | | | | |
| Maintenance log | | | | | | |
| | Other (detail) | | | | | |

| | | | |
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| | | | |
|----------------------|--|------|--|
| Applicant | | | |
| Address | | | |
| Applicant contact | | | |
| Tel. | | | |
| E-mail | | | |
| Applicants Signature | | Date | |

Section 2: Summary of results

| Field Passed | <input type="radio"/> | Field failed | <input type="radio"/> |
|--------------------------------|-----------------------|-----------------------|--|
| Criteria that failed (if any): | | | |
| Ball / Surface interaction | <input type="radio"/> | Vertical ball rebound | <input type="radio"/> Ball roll |
| Player / Surface interaction | <input type="radio"/> | Shock absorbency | <input type="radio"/> Deformation |
| | <input type="radio"/> | Rotational resistance | |
| Construction Requirements | <input type="radio"/> | Regularity | <input type="radio"/> Consistency of site and laboratory materials |

| | | | |
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| Report details | |
|---------------------------------------|-----------|
| Laboratory Director (signature) | |
| Date | |
| Test laboratory | |
| Project No. | |
| FIFA Accredited Engineer on site | Name |
| | Signature |
| Names of other Test Engineers on site | |
| | |

| Test conditions | | | | | | | | | |
|--------------------------------|--------------------|--|------|--|-----------------|--|------|--|--|
| Date(s) of test | Day 1 | | | | Day 2 | | | | |
| | | | | | | | | | |
| Surface condition (dry or wet) | | | | | | | | | |
| Surface temperature (°C) | Min. | | Max. | | Min. | | Max. | | |
| Humidity (%RH) | Min. | | Max. | | Min. | | Max. | | |
| Maximum wind speed | Ball rebound tests | | | | Ball roll tests | | | | |
| | m/s | | | | m/s | | | | |

| | | | |
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| Maintenance equipment on site | | | | |
|---|-----|-----------------------|----|-----------------------|
| Tractor Unit | Yes | <input type="radio"/> | No | <input type="radio"/> |
| Drag Brush | | <input type="radio"/> | | <input type="radio"/> |
| Drag Mat | | <input type="radio"/> | | <input type="radio"/> |
| Infill materials to top up penalty spot and corner areas | | <input type="radio"/> | | <input type="radio"/> |
| Ball roll ramp | | <input type="radio"/> | | <input type="radio"/> |
| Up to date maintenance log | | <input type="radio"/> | | <input type="radio"/> |
| Sprinkler system | | | | |
| Does the field contain sprinklers within the playing area or run-offs | Yes | <input type="radio"/> | No | <input type="radio"/> |
| If the field does contain sprinklers within the playing area or run-offs do the additional shock absorption and deformation test results fall within the required ranges. | Yes | <input type="radio"/> | No | <input type="radio"/> |
| Append test results and a drawing showing the position of all sprinklers (identifying those on which tests were made) to this report | | | | |

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Section 3: Detailed results

Ball/surface and player/surface interactions

| Property | Specified range | Test Position | | | | | | Pass / fail |
|-----------------------|-----------------|---------------|---|---|---|---|---|-------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | |
| Vertical ball rebound | 0.60 m – 1.00 m | | | | | | | |
| Ball roll | 4.0 m – 10.0 m | | | | | | | |
| Shock absorption | 55 % - 70 % | | | | | | | |
| Deformation | 4.0 mm – 9.0 mm | | | | | | | |
| Rotational Resistance | 25 Nm – 50 Nm | | | | | | | |

| | | | |
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Infra-structure tests & measurements

| Shock absorption of shockpad, when applicable | ± 5% FR of reference sample | | Reference * | 1 | 2 | 3 | 4 | |
|---|-----------------------------|-------------------|-------------|---|---|---|---|--|
| | | Result | | | | | | |
| | | Variation | | | | | | |
| Thickness of shockpad, when applicable | ≥90% of reference sample | | Reference * | 1 | 2 | 3 | 4 | |
| | | Result | | | | | | |
| | | Variation | | | | | | |
| | | | | | | | | |
| Pitch dimensions | Length | Min. 90m Max.120m | | | | | | |
| | Width | Min. 45m Max. 90m | | | | | | |

* As detailed on IATS laboratory test report

| | | | |
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Product identification

| Component | Property | Site sample | Manufacturer's declaration | Variation | FIFA requirement | Pass / Fail |
|-----------------|---------------------------|-------------|----------------------------|------------|--------------------------|---|
| Artificial turf | Mass per unit area | | | | $\leq \pm 10\%$ | |
| | Tufts per unit area | | | | $\leq \pm 10\%$ | |
| | Tuft withdrawal | | | | $\geq 90\%$ of reference | |
| | Pile length above backing | | | | $\leq \pm 5\%$ | |
| | Total Pile weight | | | | $\leq \pm 10\%$ | |
| | Dtex | | | | $\leq \pm 10\%$ | |
| | Yarn characterisation | | | | Same polymer | |
| | Water Permeability | | | Lab result | | $\geq 180\text{mm/h}$ and $> 75\%$ of laboratory result |

| | | | |
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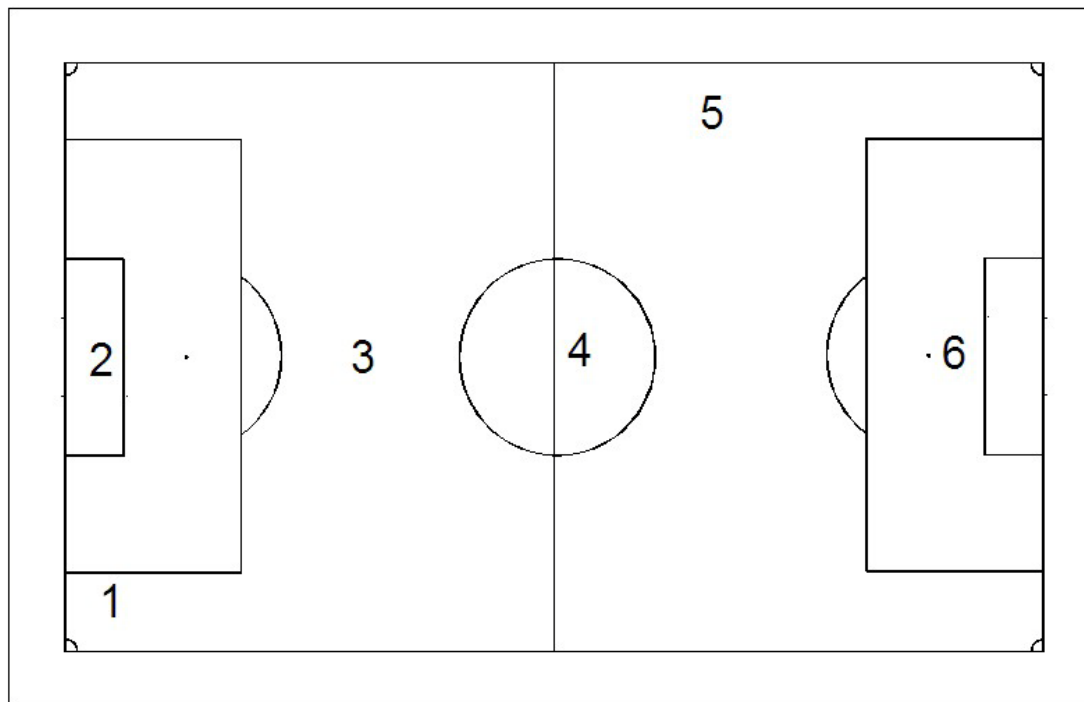
| Component | Property | Site sample | Manufacturer's declaration | Variation | FIFA requirement | Pass / Fail |
|--------------------|----------------|-------------|----------------------------|-----------|------------------|-------------|
| Performance infill | Particle size | | | | $\leq \pm 20\%$ | |
| | Particle shape | | | | Similar shape | |
| | Bulk density | | | | $\leq \pm 15\%$ | |

| Component | Property | Site sample | Manufacturer's declaration | Variation | FIFA requirement | Pass / Fail |
|--------------------|----------------|-------------|----------------------------|-----------|------------------|-------------|
| Stabilising infill | Particle size | | | | $\leq \pm 20\%$ | |
| | Particle shape | | | | Similar shape | |
| | Bulk density | | | | $\leq \pm 15\%$ | |

| | | | |
|-----------------|--|---------------|---------|
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Field test position – mark orientation on drawing



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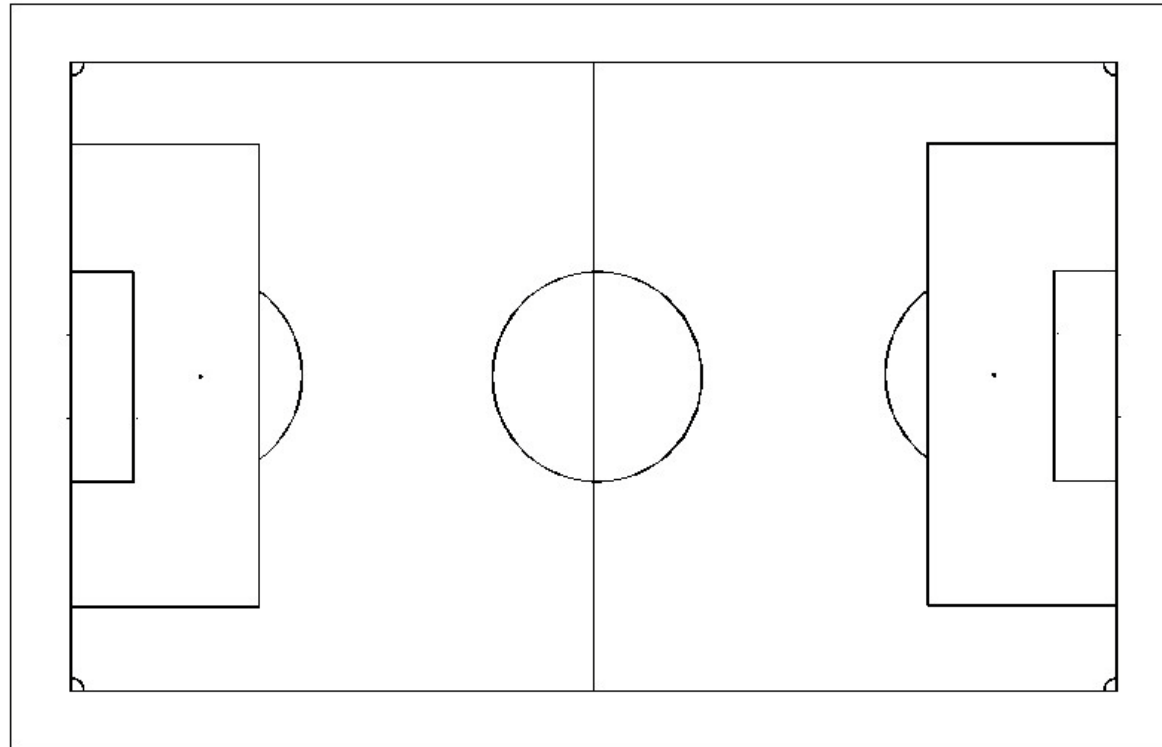
International Artificial Turf Standard Field Re-test Report (2009 edition)

Photographic record on maintenance equipment observed on site

| | | | |
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International Artificial Turf Standard Field Re-test Report (2009 edition)

Plan showing surface undulations exceeding 10mm – detail location, size and magnitude



| | | | |
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Section 1: Site and applicant details

| | | | |
|-------------------------------|----------------------|--|-------------------------|
| IATS Field Test Report Number | | | |
| Club (if applicable) | | | |
| Address | Stadium or site name | | |
| | | | |
| | City | | |
| | Country | | |
| Stadium or site contact | | | |
| Tel. | | | |
| Email | | | |
| Surface name | | | |
| Date pitch installed | | | |
| Applicant | | | |
| Address | | | |
| Applicant contact | | | |
| Tel. | | | |
| E-mail | | | |
| Date of initial field test | | | Date of last field test |
| | | | |
| Applicants Signature | | | Date |
| | | | |

| | | | |
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Section 2: Summary of results

| | | | | |
|---|-----------------------|-----------------------|-----------------------------------|-----------------------|
| Field Passed | <input type="radio"/> | Field failed | <input type="radio"/> | |
| Criteria that failed (if any): | | | | |
| Ball / Surface interaction | <input type="radio"/> | Vertical ball rebound | <input type="radio"/> Ball roll | |
| Player / Surface interaction | <input type="radio"/> | Shock absorbency | <input type="radio"/> Deformation | |
| | <input type="radio"/> | Rotational resistance | | |
| Construction Requirements | <input type="radio"/> | Regularity | | |
| On the basis of the surface identification measurements (including more detailed laboratory tests where required) is the Football Turf the same product as that assessed at the Initial Field Test? | | | Yes | <input type="radio"/> |
| | | | No | <input type="radio"/> |
| Laboratory Director | | | | |
| Date | | | | |
| Test laboratory | | | | |
| Test laboratory project reference | | | | |
| FIFA Accredited Engineer on site | Name | | | |
| | Signature | | | |
| Names of other Test Engineers on site | | | | |
| | | | | |

| | | | |
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| Maintenance equipment on site | | | | |
|--|-----|---|----|---|
| Tractor Unit | Yes | o | No | o |
| Drag Brush | | o | | o |
| Drag Mat | | o | | o |
| Infill materials to top up penalty spot and corner areas | | o | | o |
| Ball roll ramp | | o | | o |
| Up to date maintenance log | | o | | o |

| Sprinkler system | | | | |
|---|-----|---|----|---|
| Does the field contain sprinklers within the playing area or run-offs | Yes | o | No | o |
| If the field does contain sprinklers within the playing area or run-offs do the additional shock absorption and deformation test results fall within the required ranges. | Yes | o | No | o |
| Append test results and a drawing showing the position of all sprinklers (identifying those on which tests were made) to this report | | | | |

| Test conditions | | | | | | | | | |
|--------------------------------|--------------------|--|------|--|------|-----------------|------|--|--|
| Date(s) of test | Day 1 | | | | | Day 2 | | | |
| | | | | | | | | | |
| Surface condition (dry or wet) | | | | | | | | | |
| Surface temperature (°C) | Min. | | Max. | | Min. | | Max. | | |
| Humidity (%RH) | Min. | | Max. | | Min. | | Max. | | |
| Maximum wind speed | Ball rebound tests | | | | | Ball roll tests | | | |
| | m/s | | | | | m/s | | | |

| | | | |
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Section 3: Detailed results

Ball/surface and player/surface interactions

| Property | Specified range | Test Position | | | | | | Pass / fail |
|-----------------------|-----------------|---------------|---|---|---|---|---|-------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | |
| Vertical ball rebound | 0.60 m – 1.00 m | | | | | | | |
| Ball roll | 4.0 m – 12.0 m | | | | | | | |
| Shock absorption | 55 % - 70 % | | | | | | | |
| Deformation | 4.0 mm – 9.0 mm | | | | | | | |
| Rotational resistance | 25 Nm – 50 Nm | | | | | | | |

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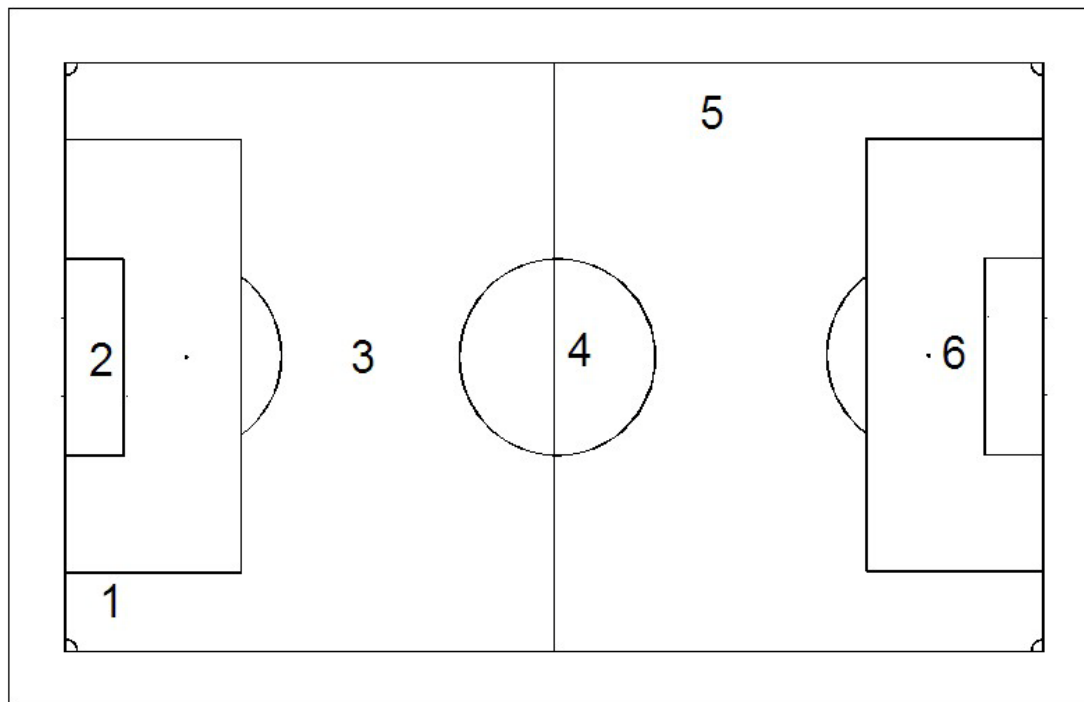
Product identification

| Property | Test Position | | | | | Manufacturer's declaration | % variation | Pass / fail |
|--|---------------|---|---|---|------|----------------------------|-------------------------------|-------------|
| | 1 | 2 | 3 | 4 | Mean | | | |
| Artificial grass surface | | | | | | | | |
| Pile height | | | | | | | | |
| Stitch gauge (mm) | | | | | | | | |
| Tufts per 100mm | | | | | | | | |
| Calculated tufts per unit area | | | | | | | | |
| Performance infill | | | | | | | | |
| | Test Position | | | | | | Manufacturer's declared range | Pass / fail |
| | 1 | 2 | 3 | 4 | 5 | 6 | | |
| Largest sieve retaining at least 10% of infill | | | | | | | | |

| | | | |
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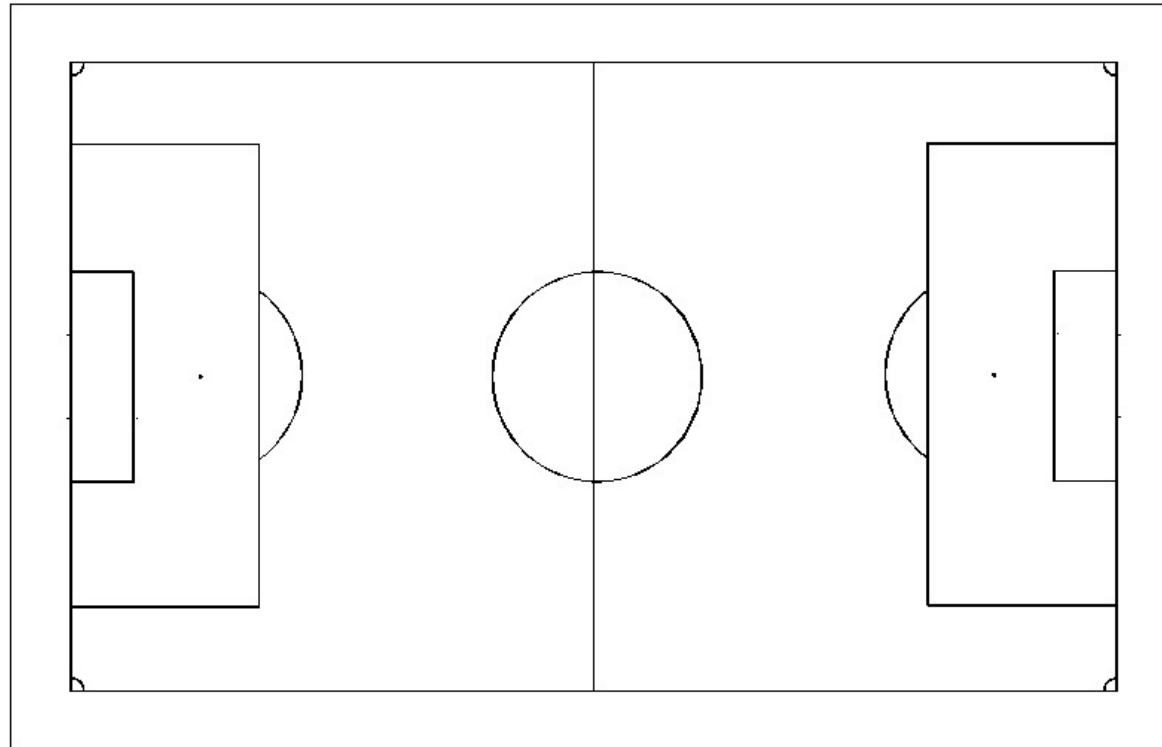
Field test position – mark orientation on drawing



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Plan showing surface undulations exceeding 10mm – detail location, size and magnitude



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Photographic record of maintenance equipment observed on site

| | | | |
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