Document Owner:
Advanced Creation Testing – Lab Standards

Document Author:	**Document Approver:**
Harald Schaefer Sen. Manager Lab Standards FW Deyang Feng Manager lab standards FW	Michael Otto Senior Manager Lab Standards

Applicability - Brand: Adidas, Reebok	**Division:** FW

Scope: All finished uppers from development types TN, NM and NS

Referenced documents
adidas test methods
FT-07, GE-24, GE-29, GE-48, GE-63, GE-90, ST-02, ST-03, ST-05, ST-10, FGT-14, PHP-UN0002, FGT-28

NOTE… This procedure is a combination of existing adidas test methods. For getting the details of the testing, please refer to the above-mentioned test methods.

Purpose
● To determine the physical properties of upper components in development and production stage.

Apparatus
● Refer to the specific apparatus described in the test procedures.
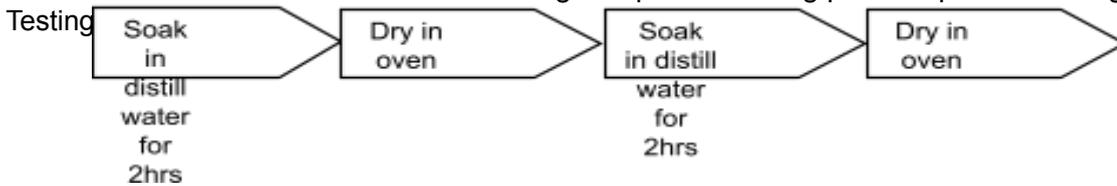
Numbers of test pieces and cutting
● 5 complete uppers in size 8.5/5.5 without heel counter, including reinforcement and linings, correct treatments, components like prints, weldings eyelets, punch holes etc need to be applied.
● Using cutting dies is preferred.

Test conditions

● Condition uppers for one hour with standard room conditions (23 ± 2 °C and 50% ± 10% humidity) before testing.
● Unless mention otherwise, the test must also be performed with standard room condition.

Notes

1. For NC models with risky colors, factory lab manager decides when these tests are needed.
2. The testing facility decides which part of the upper to be used for which required tests base on product use purpose, needs of the part group and specimen size. The exact same specimen location must be chosen for later production tests to avoid critical differences in results.
3. Adhesion specimens shall not be taken from areas where seams are located.
4. In case standard specimen cannot be taken, suitable measurements of the specimens can be decided by the factory lab manager.
5. Prints or coating on laces can only be tested with GE-29 on the flat laces.

6. Prints on soccer shoes must undergo a special treating process prior to testing:

Testing
| Soak in distill water for 2hrs | → | Dry in oven | → | Soak in distill water for 2hrs | → | Dry in oven |

Test Procedures and Evaluation

FT-07 Heat Aging

1. Put the upper component into an air circulating oven for 2 days at 100 °C.
2. Check colour migration in comparison to the untested upper using FT-00 for evaluation. Refer to figure 1.

Not tested   After test
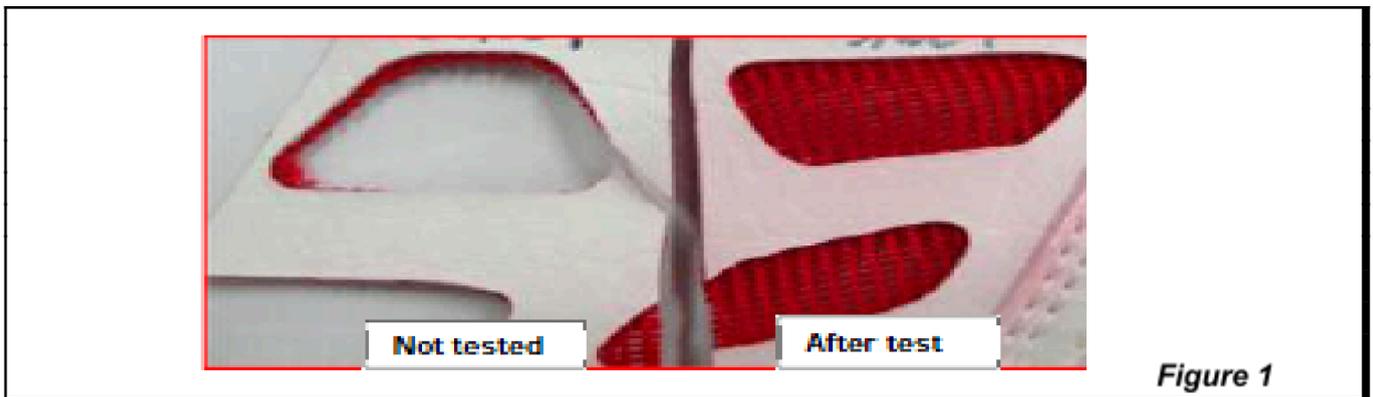
Figure 1

GE-24 Flexometer Test

1. Cut specimens according to GE-24, especially for those upper areas where flexing will be critical (see figure 2).
2. Test and evaluate according to GE-24.

figure 2
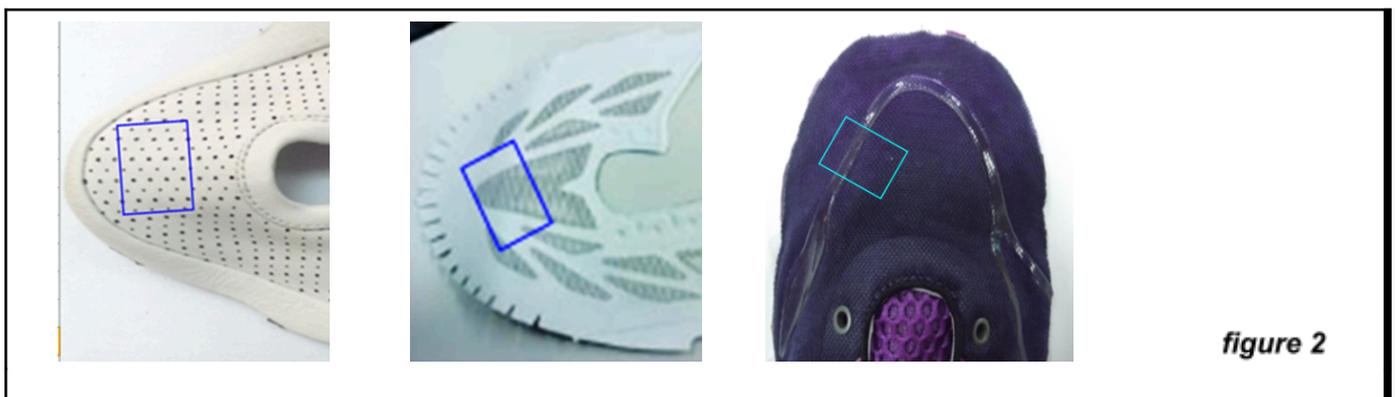
Additional Test Procedure to SL rubber design with single irregular elements

PHP-FW0709

Per GE-24, Flexometer normal 100k cycles and Flexometer after hydrolysis 100k cycles.

Evaluation

No any cracks or delamination in flexed area

GE-29 Rubbing Fastness
See procedure GE-29 for all details needed to perform the test and the evaluation. Refer to figure 3 for the cutting area.

figure 3

figure 4

GE-63 Martindale Abrasion
1. Cut specimens that way that all textile materials (upper and lining) can be tested
2. Test and evaluate the different specimens as described in GE-63. Refer to figure 4.
*In case of embroidery design (including fuse technology, etc.), please test with sandpaper for 10 cycles. If fail, then please test with 20 oz canvas for 300 cycles. Only if fail both standards, conclude this test specimen fail.

GE-48 Adhesion of Prints on Substrates
1. See GE-48 for details and evaluation.
2. Use multi blade cutting tool for hard materials and single blade cutting tool (knife) for soft materials like leathers, synthetics etc.

FGT-14 Washing Aging test
1. Prepare specimen and test according to FGT-14.

2. Check for delamination and damage after washing.

FGT-28 bonding pulling A
Note: this test item only valid for type of SL rubber design with single irregular elements in the shape of spike, cone, pyramid or prism which have very small bonding areas. In case of regular SL rubber design with larger bonding areas (stripe, bar, any large flat elements), usual test procedures and requirements are to be used. (Similar design using other material types also need to test according to this test method).

1. bonding pulling without pre-aging
Done on upper on pre-selected points, test method and requirement according to FGT-28 Additional Test procedure for SL Rubber design finished shoes.

2. bonding pulling after 4h washing aging
Done on upper on pre-selected points, test method and requirement according to FGT-28 Additional Test procedure for SL Rubber design finished shoes.
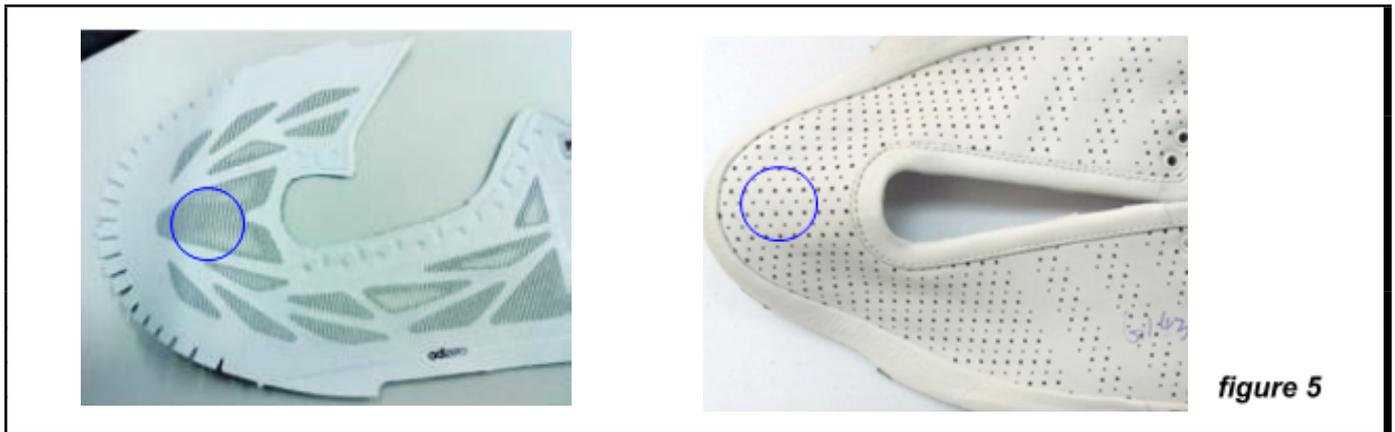
FGT-28 bonding pulling B (long stripe shape)

Test method and test method and requirement according to FGT-28.
Note: SL rubber in long stripe shape, start bonding test from one side of the strap, do not cut in the middle.

GE-90 Burst test
1. Prepare and test specimens according to GE-90 (See figure 5).
2. Start the test until the material is broken or required force is reached.
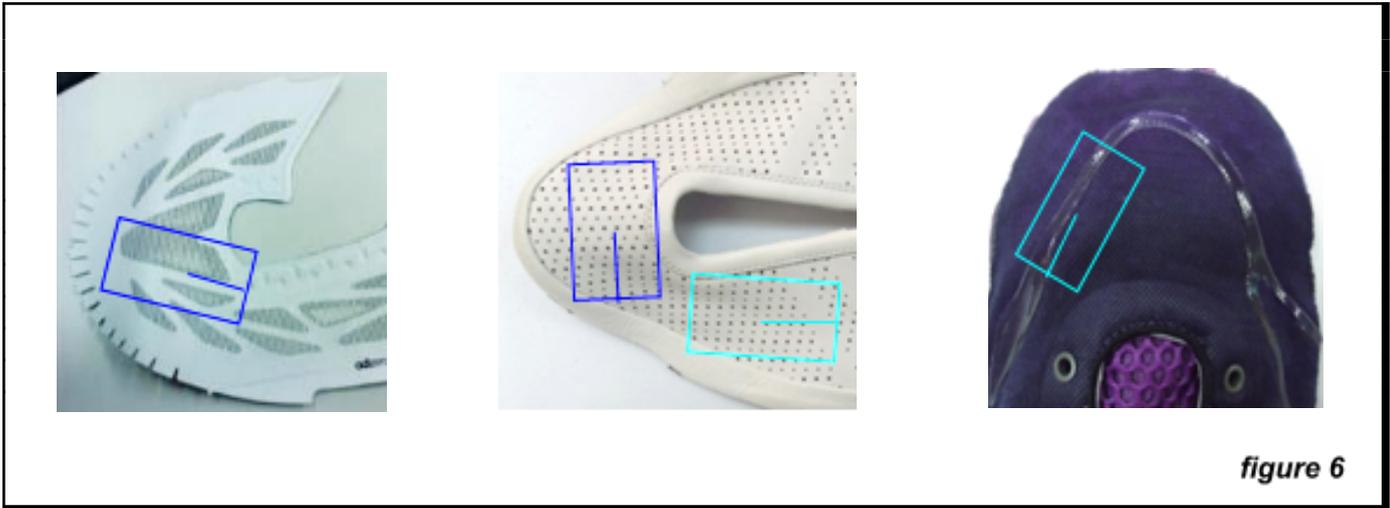

figure 5

ST-02 Tear strength
1. Cut 2 specimens as big as possible from those areas shown in figure 6.
2. Depending on the specimen size, set clamp distance of tensile machine to a minimum of 30mm or more, test speed is 100mm/min.
3. Record the tearing force in a diagram.
 a) The test is evaluated with the written diagram (force/way) of the tensile tester;
 b) Let the tensile machine run for at least 75mm and take the first 5 peaks for the calculation; If there is no peak during the first 75mm, let the machine run until you have at least 5 peaks; In case there are less than 5 peaks until the material tear off completely, average all peaks as the result.
 c) The initial (first) peak should be always ignored.

    d) Record the result in N (Newton).

figure 6

ST-03 Tensile strength
1. Cut 2 specimens at a width of 25.4mm and a length of maximum 150 mm from the areas shown in figure 7.
2. Depending on the specimen length set the clamp to a reasonable distance, test speed is 300 mm/min.
3. Stop the test when the material is broken.
4. Record the Strength at the breakage in N/cm.

figure 7
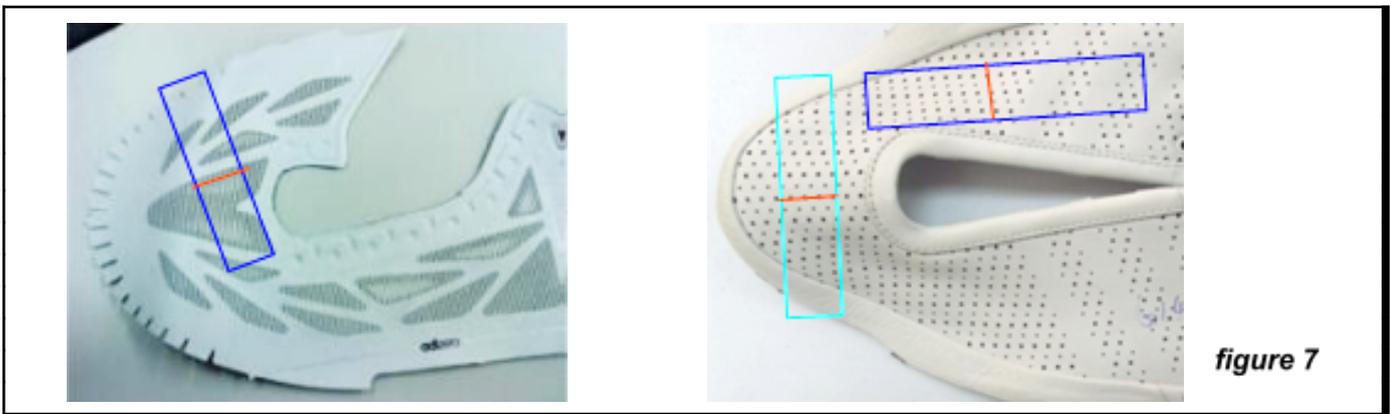
ST-05 Seam Pull test
1. This test is required for forefoot area where larger force is applied during wearing, but not limited to forefoot if risk/weakness is observed on other parts of the shoe .
2. Cut specimens from upper areas where two materials are connected by seam, refer to figure 8.
3. Cut the two specimens using the textile cutting die for tensile strength (25.4mm x150mm) from different areas.
4. Fix the loose thread ends of the specimen using a super glue.
5. Depending on the specimen length set the distance of clamps of tensile machine to a reasonable distance, test speed is 100mm/min.
6. Stop the test when seam is broken.
7. Record the Strength at the breakage in N/cm.

PHP-FW0709

Seam Pulling strength between two material at critical area

figure 8

ST-10 Adhesion test
1. Prepare specimen and test according to ST-10.
2. Check for adhesion of material to additional layers. Evaluate according to ST-10.

PHP-UN0002 Air Permeability
1. Perform test in quarter and vamp area (exclude heel area) without cutting specimens on defined products
2. Calculate the average result from the different testing areas

Report:
Main upper material type/construction/treatment need to be selected in order to show the required test items/requirements.

CT-09 test report
updated on 2021

Safety
Use of this test method may pose safety concerns and the user of the method is responsible to determine appropriate health and safety measures that should be taken, including any local health and safety regulatory limitations that may apply.

Requirements (*before aTP implementation*)
Implemented in aTP

PHP-FW0709

Document version history (*before aTP implementation*)

Version	Date	Author	Notes
06	19.03.2019	Harald Schaefer	● CT-09 Test report update
07	02.06.2020	Deyang Feng	● GE-63 updated for embroidery design and fuse technology
08	12.07.2020	Deyang Feng	● CT-09 test report updated according to previous update
09	10.03.2021	Selena Zhou	● Update GE-48 standard according to Harald comment.
10	18.06.2021	Kathy Lee	● Add SL rubber test method and requirement