

Solidscreen® II

Microplate for Solid Phase Antiglobulin Tests with TANGO® instruments

FOR IN-VITRO DIAGNOSTIC USE

Package size

[REF] 806521100 **[VOL]** 10 Microplate (12 strips each)

Intended Use

The Solidscreen® II solid phase antiglobulin test is intended for the detection of red blood cell antibodies and antigens in the indirect and direct antiglobulin tests with the solid phase assay Solidscreen® II on TANGO® instruments.

Following immunohematological solid phase antiglobulin assays can be tested with the instruments:

- **TANGO® optimo**: antibody screening, antibody identification, crossmatch, DAT, antigen typing of weak D/partial D antigen (DVI and DVII).
- **TANGO infinity™**: antibody screening, antibody identification, crossmatch*, auto control, DAT, antigen typing of weak D/partial D antigen (DVI and DVII). * Crossmatch on TANGO infinity™ is not approved by the FDA.

Summary

Moreschi first described the use of Anti-Human Globulin in 1908¹. Coombs rediscovered the test in 1945.^{2,3} By injecting rabbits with human IgG, they were able to produce a protein (Anti-IgG) that reacted with incomplete antibodies (IgG). Most "incomplete" antibodies (IgG) fail to agglutinate red blood cells suspended in saline.⁴ Most clinically significant antibodies in red blood cell serology are of the IgG class and can only be detected by the use of Anti-IgG. A stable lattice structure is formed and agglutination occurs when Anti-IgG binds to the IgG sensitized red blood cells. The ability to detect alloantibodies or autoantibodies directed against human red blood cells, in human plasma or serum, is a necessary part of routine laboratory testing. There are two very important applications for antibody detection:

1. The detection of red blood cell antibodies prior to red blood cell or whole blood transfusion to prevent the possibility of a transfusion reaction with accompanying red cell destruction.
2. To detect the presence of red blood cell antibodies in maternal or newborn serum that may result in Hemolytic Disease of the Newborn.

Routine pretransfusion studies always include tests for alloantibodies or autoantibodies directed against human red blood cells

Principle

Solidscreen® II is a solid phase assay for

- a) the detection of red blood cell antibodies in human plasma or serum.
- b) the determination of weak D and partial D antigens (DVI and DVII) of samples which have tested negative with IgM anti-D using Erytype® S.

The Solidscreen® II well is coated with Protein A. Protein A is a component of the cell wall of *Staphylococcus aureus* and has a very high affinity for the Fc portion of most immunoglobulin classes⁵.

For a) The plasma or serum and Reagent Red Blood Cells are added to the Protein A coated well. Sensitization of the red cell occurs if the corresponding antibody is present for the antigen on the red cell.

For b) Solidscreen® II Anti-D Blend Blood Grouping Reagent and test red blood cells are added to the Protein A coated well. Sensitization of the red blood cell occurs if D antigen is present on the red blood cell.

Following incubation, and two wash processes to remove unbound protein, Anti-Human Globulin is added to the well and acts as a link between the antibody coating of neighbouring red blood cells and induces solid phase. Uncoated red blood cells will form a red blood cell button. Following centrifugation, the well is evaluated. A smooth monolayer of red blood cells is indicative of a positive reaction. A compact button of cells in the middle of the well is indicative of a negative reaction.

Reagent

The Solidscreen® II microplate consists of twelve strips containing eight wells per strip. Each well is coated with Protein A. Each Solidscreen® II microplate is packaged in a foil container to prevent contamination. Each plate is ready to use.

Precautions

- For *in vitro* diagnostic use
- Plates that have been opened and not loaded on the TANGO® instruments may be stored, uncovered, in a dry area, not to exceed 24 hours.
- Do not use beyond the expiration date
- Do not freeze
- Do not use beyond seven days on the TANGO® instruments
- Do not attempt to reuse unused portions of the strip
- Let plate come to room temperature before opening the foil packet to limit condensation
- Store foil packets at 2 to 8°C when not in use
- Do not use samples collected in gel separator tubes

Specimen Collection

For antibody screening and antibody identification (Indirect Antiglobulin Test IAT)

Fresh samples of clotted or EDTA anticoagulated whole blood can be used for antibody screening and antibody identification with the indirect antiglobulin test. Samples collected following standard blood sampling guidelines are acceptable. The specimen should be tested as soon as possible after collection. If testing is delayed, EDTA and clotted specimens should be stored at 2 to 8°C. Use of samples older than seven days should be avoided, since antibody reactivity has been shown to decrease in older samples. Stored samples should be allowed to reach room temperature prior to testing. Blood specimens exhibiting gross hemolysis or contamination should not be used.

There must be a distinct separation between the cellular and the plasma layer in the sample tube. Samples can be centrifuged or allowed to settle.

For crossmatch* and auto control** (IAT)

Fresh samples of EDTA or citrate anticoagulated whole blood samples must be used for the crossmatch. Samples collected following standard blood sampling guidelines are acceptable. The specimen should be tested as soon as possible after collection. If testing is delayed, EDTA specimens should be stored at 2 to 8°C, citrated specimens (donor segments) at 1 to 6°C. Use of EDTA anticoagulated samples older than seven days should be avoided since antibody reactivity has been shown to decrease in older samples. Donor blood stored in citrate anticoagulant at 1 to 6°C may be tested until the expiration date of the donor unit. Donor segments must be transferred to a secondary tube prior to testing on TANGO® optimo. A minimum volume of 500 µL of red blood cells is required in the secondary tube.

Stored samples should be allowed to reach room temperature prior to testing. Blood specimens exhibiting gross hemolysis or contamination should not be used.

There must be a distinct separation between the cellular and the plasma layer in the sample tube. Samples can be centrifuged or allowed to settle.

* Crossmatch testing is not approved by the FDA for the use with TANGO infinity™

** Auto control testing is not approved for the use with TANGO® optimo.

For Direct Antiglobulin Test (DAT)

Fresh samples of EDTA anticoagulated whole blood samples and cord blood samples (cord blood samples are not approved for TANGO® optimo) must be used for the Direct Antiglobulin Test. Samples collected following standard blood sampling guidelines are acceptable. The specimen should be tested as soon as possible after collection. If testing is delayed, blood samples should be stored at 2 to 8°C. Use of samples older than seven days should be avoided unless there is no other alternative since antibody reactivity has been shown to decrease in older samples. Stored samples should be allowed to reach room temperature prior to testing. Blood specimens exhibiting gross hemolysis or contamination should not be used.

There must be a distinct separation between the cellular and the plasma layer in the sample tube. Samples can be centrifuged or allowed to settle.

For weak D and partial D antigen typing (IAT)

Fresh samples of EDTA or citrate anticoagulated whole blood samples ◀ must be used for the weak D test. Samples collected following standard blood sampling guidelines are acceptable. The specimen should be tested as soon as possible after collection. If testing is delayed the EDTA anticoagulated samples should be stored at 2 to 8°C. EDTA anticoagulated whole blood samples may be tested for up to seven days following collection. Donor blood stored in citrate anticoagulant at 1 to 6°C may be tested until the expiration date of the donor unit. Donor segments must be transferred to a secondary tube prior to testing on the instruments. A minimum volume of 500 µL of red blood cells is required in the secondary tube.

Donor and patient samples can be tested on TANGO infinity™. Testing of cord blood samples on TANGO infinity™ is only approved by Health Canada.

Only donor samples are approved for testing on the TANGO® optimo.

Stored samples should be allowed to reach room temperature prior to testing. Blood specimens exhibiting gross hemolysis or contamination should not be used.

There must be a distinct separation between the cellular and the plasma layer in the sample tube. Samples can be centrifuged or allowed to settle.

Materials

Materials Provided

- Solidscreen® II

Material required but not provided

- TANGO® optimo **[REF]** 848900010
- TANGO infinity™ **[REF]** 850000010 ◀
- Deionized water
- MLB 2 (modified LiSS Bio-Rad) **[REF]** 805200100
- Biotestcell® Pool **[REF]** 816065100, Biotestcell® 1 & 2 **[REF]** 816014100, Biotestcell® 3 **[REF]** 816085100, Biotestcell®-I 8 **[REF]** 816020100, Biotestcell®-I 11 **[REF]** 816021100, Biotestcell®-I 11 Plus **[REF]** 816022100
- Donor or patient red blood cells
- Solidscreen® II Anti-D (RH1) Blend **[REF]** 806530100
- Alsevers Solution **[REF]** 806510100
- Anti-Human Globulin Anti-IgG Solidscreen® II **[REF]** 806516100
- Solidscreen® II Control **[REF]** 806514100
- Solidscreen® II Control B **[REF]** 806519100
- Solidscreen® II Negative Control **[REF]** 806509100
- Washing Solution Concentrate **[REF]** 848000091
- Centrifuge (optional)
- Cell Mixers

Test Procedure

Please refer to the instructions for use in the appropriate instrument User Manual.

Quality Control

A minimum of one positive and one negative control should be run each day before testing or according to local requirements to ensure that the reagents and automated system components are functioning properly.

Solidscreen® II Control (containing diluted Anti-D) or Solidscreen® II Control B (containing diluted Anti-ĉ) can be used as the positive control. The Solidscreen® II Negative Control can be used as a negative control.

Interpretation of QC

The tests are considered valid if the expected results for the controls are obtained. If the controls do not give the expected results, you must determine the cause for the failed QC.

Follow institutional SOP for repeat testing of QC samples, repeat testing of patient/donor samples and documentation of QC results and corrective action if required.

Interpretation of Results

For the instrument the results are read immediately and a digital image is stored for review by the operator. Image algorithms contained in the software evaluate and provide an interpretation (positive or negative) of the well.

In a positive result, a stable lattice structure is formed and is seen as a layer of red blood cells across the bottom of the well. A negative result is seen as a compact red blood cell button at the center of the well, as no lattice has been formed.

The operator performs validation of the final results.

Positive Result: A layer of cells across the bottom of the well.

Negative Result: A compact cell button at the bottom of the well.

Limitations

- The intended use of the antiglobulin cross matching using Anti-Human Globulin Anti-IgG Solidscreen® II on the TANGO® instruments is the detection of incompatibilities due to IgG antibodies, it is not intended for the detection of ABO incompatibilities.
- Low frequency antigens may not always be present on Reagent Red Blood Cells, and a double dose of antigen may be required to detect very weakly reacting antibodies. Therefore, negative reactions with the screening cells do not always indicate the absence of unexpected antibodies. Such antibodies are usually directed against the known antigens present on the screening cells, but may be directed against an antigen not indicated on the antigenic constitution matrix.
- Insufficient or inappropriate washing can lead to false negative or false positive reactions. Small amounts of residual patient sera/plasma can neutralize the Anti-Human Globulin.
- There is no anti-complement activity with this product. Red blood cells coated with complement will not give a positive reaction.
Some conditions that may cause false positive results are:
 - Contamination of sample or reagents
 - Autoantibodies
 - Improper storage or preparation of cells
 - Antibodies to antibiotics or other reagent components.
Reagent Red Blood Cells not being mixed prior to loading on the TANGO® instruments
- Positive reactions may be seen from individuals who have received Rh Immunglobulin.
- Negative reactions will be obtained if the sample contains antibodies present in concentrations too low to be detected by the test method employed. No test method is capable of detecting all red cell antibodies.
- Solidscreen® II is designed to detect antibodies in physiologic samples containing plasma or serum. Antibodies in artificial samples lacking serum or plasma might not be detected.

Specific Performance Characteristics

Testing is performed in accordance with FDA recommended methods.

The final release testing is performed according to the product specific SOPs. As part of the release process each lot of Bio-Rad reagent is tested according to the package insert method to insure suitable reactivity.

For the product performance it is necessary to adhere to the recommended method in the instructions for use.

The performance of the Bio-Rad reagents for Solidscreen® II was confirmed against a FDA approved reference reagent in a multi-center clinical trial.

For Technical Support or further product information, contact Bio-Rad Laboratories Inc. at 800-224-6723.

Note

Used tests must be discarded as hazardous material. Manage waste according to local, state and national regulations

Glossary of Symbols

Symbol	Definition	Symbol	Definition
☐	Batch Code	☐	<i>In vitro</i> diagnostic medical device
⚠	Caution, consult accompanying documents	☐	Consult instructions for use.
■	Manufacturer	🕒	Use by YYYY-MM-DD
▽	Contains sufficient quantity for <n> tests.	☐	Catalog number
🔥	Temperature limitation		

Bibliography

- Moreschi C. Neue Tatsache über die Blutkörperchen Agglutinationen, Zbl Bakt 1908; 46:49,456
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- KJ Reis et al. Journal of Immunology 1984

Key: Underline = Addition of changes ◀ = Deletion of text