

Whatman™ FTA™ Cards

Product Information Sheet

Warning: For research use only. Not recommended or intended for diagnosis of disease in humans or animals. Not for use internally or externally on humans or animals

Directions for Use:

FTA product allows for biological sample preservation whilst sampling and shipping via regular mail, at ambient conditions (298.15 K (25°C, 77°F) and an absolute pressure of 100 kPa (14.504 psi, 0.986 atm). FTA products protect the DNA of biological samples from degradation by DNA degrading microorganisms. Samples can then be stored and preserved at room temperature (20–25 degrees).

It is a violation of Federal Law to use this product inconsistent with its labelling. For sample protection, always wear gloves when handling FTA cards. For research use only. Not for use in diagnostic procedures. See the accompanying information or the outer container for additional use information. FTA card allows for the shipping and handling of DNA at ambient conditions without fear of sample degradation or contamination caused by DNA degrading microorganisms. Samples can be stored at room temperature. Ship via regular mail, but please refer to the guidance in the Legal section below.

Description:

FTA cards are designed for room temperature collection, shipment, archiving, and purification of nucleic acids from a wide variety of biological samples for PCR analysis. These include (but are not limited to) blood, buccal cells, tissue, cultured cells, microorganisms and plant tissue. FTA cards are impregnated with a patented chemical formula that lyses cell membranes and denatures proteins upon contact. FTA cards are available in several formats such as the Classic Card, Mini Card, Micro Card, and Gene Card. Indicating FTA cards turn from pink to white upon sample application and are recommended for colorless samples. To use FTA cards, simply apply sample (liquid or pressed tissue), air dry at room temperature, and then remove a small disc (the size of which needs to be determined by application). The disc is either washed and used in PCR based analysis, or can be used without washing in a direct amplification (see below for protocols).

Precautions:

Handling: Always wear gloves to avoid contamination of FTA cards. Follow universal precautions when handling biological specimens.

Storage: Store unused cards in original packaging in a cool, dry, clean environment. After applying samples, allow them to dry, then store at room temperature in a dry environment.

Storage and Disposal Statements

Card Storage: Store securely at room temperature in a dry environment, away from food or feedstock.

Card Disposal: Safe disposal of used FTA cards should be accomplished in accordance with all local, state/provincial, and/or national regulations regarding waste disposal. Do not reuse the FTA card. Do not dispose it in the regular trash.

Instructions:

Application of Blood Samples (fresh whole blood, or with the anticoagulants: EDTA, sodium citrate, ACD, or heparin):

1. Label the FTA card with the appropriate sample identification.
2. Drop the blood (< 125 µl per 1 inch circle, < 75 µl per 3/4 inch circle) onto the card in a concentric circular motion within the printed circle area. Avoid “puddling” of the liquid sample as it will overload the chemicals on the card. Also, do not rub or smear the blood onto the card.
3. Dried blood spots will appear darker than freshly spotted ones.

Note: The recommended drying time for samples is not less than three hours at room temperature. This period has been determined by following the drying time of 125 µl of whole human blood at 18–22°C and 60% relative humidity using a sample weight loss method. Users will need to determine whether different sample types or volumes or different local conditions will require longer or shorter drying times. Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

4. Samples applied to FTA cards are now ready either for immediate downstream processing or archiving at room temperature.

Collection and application of buccal cell samples:

1. Place the FTA card (indicating FTA is recommended) on a clean, dry, flat surface. Label the FTA Card with appropriate sample identification.
2. Remove one Foam Tipped Applicator (Whatman Cat. No. WB100032) from the protective packaging according to instructions.
3. Hold the plastic handle of the Applicator, place the foam tip in the mouth and run the foam tip along the fold of the cheek and under the tongue, soaking up as much saliva as possible. Then rub one side of the foam tip on the inside of the cheek for 15 seconds. Repeat using the opposite side of the foam tip for the other cheek. Run the foam tip along the; fold of the cheek and under the tongue, soaking up as much saliva as possible. Remove the Applicator from the mouth.
4. Lift the paper cover of the Indicating FTA card to expose the pink sample area. Press the flat surface of the foam applicator tip within the sample circle area. Without lifting the foam tip from the card, squeeze the tip using a side-to-side rocking motion (90° in each direction) 3 times to completely saturate the sample area. Turn the applicator over and repeat with the other side of the foam tip within the same circle. The sample area will turn white indicating the location of sample.



5. If not using the Indicating FTA cards, circle the area of the sample location with a ballpoint pen or pencil.
6. Discard the applicator according to laboratory procedure. Do not place the foam swab into the mouth after it has touched the FTA card.
7. If buccal cells are to be applied to more than one FTA circle area, use a new applicator and repeat steps 1–6.
8. After drying, samples applied to FTA cards are now ready either for immediate downstream processing or archiving at room temperature.

Note: The recommended drying time for samples is not less than three hours at room temperature. This period has been determined by following the drying time of 125 µl of whole human blood at 18–22°C and 60% relative humidity using a sample weight loss method. Users will need to determine whether different sample types or volumes or different local conditions will require longer or shorter drying times. Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

Application of Tissue/Cell culture samples:

1. Tissue culture cells should be applied to FTA Cards at a concentration of > 100 cells/µl for DNA analysis and > 1000 cells/µl for RNA analysis in media, trypsin or PBS buffer. Approximately 65 µl of sample will fill a 1 inch printed circle on an FTA Card.
2. Samples applied to FTA cards are now ready either for immediate downstream processing or archiving at room temperature.

Note: The recommended drying time for samples is not less than three hours at room temperature. This period has been determined by following the drying time of 125 µl of whole human blood at 18–22°C and 60% relative humidity using a sample weight loss method. Users will need to determine whether different sample types or volumes or different local conditions will require longer or shorter drying times. Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

Application of Plant samples:

Direct leaf press:

1. Place leaf material directly onto the FTA card. Lay a piece of Parafilm® over the leaf.
2. Apply moderate pounding/pressure to the leaf area with a blunt object such as a tack hammer or pestle.
3. When the extract is drawn through to the back of the FTA card, the collection process is complete.
4. After drying, samples applied to FTA cards are now ready either for immediate downstream processing or archiving at room temperature.

Note: The recommended drying time for samples is not less than three hours at room temperature. This period has been determined by following the drying time of 125 µl of whole human blood at 18–22°C and 60% relative humidity using a sample weight loss method. Users will need to determine whether different sample types or volumes or different local conditions will require longer or shorter drying times. Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

Plant Tissue Homogenate:

1. Use about 10–20 mg of plant tissue for the homogenate.
2. Add PBS buffer to plant tissue using an estimated ratio of 5 parts PBS buffer to 1 part plant tissue. Grind with a pestle until it is apparent that some plant tissue is homogenized. The homogenate does not have to be smooth in consistency.
3. Using a pipette, apply about 25 µl of plant homogenate to each circle on an FTA card.
4. After drying, samples applied to FTA cards are now ready either for immediate downstream processing or archiving at room temperature.

Note: The recommended drying time for samples is not less than three hours at room temperature. This period has been determined by following the drying time of 125 µl of whole human blood at 18–22°C and 60% relative humidity using a sample weight loss method. Users will need to determine whether different sample types or volumes or different local conditions will require longer or shorter drying times. Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

Application of Bacterial Samples (for bacterial genomic DNA) Bacterial colonies:

1. Pick one colony from agar and suspend in 5–10 µl of bacterial culture medium, PBS, or TE⁻¹ buffer (10 mM Tris-HCl, 0.1 mM EDTA, pH 8.0).
2. Apply 5–10 µl of bacterial suspension to FTA (Indicating FTA Cards are recommended). If applied to non-indicating FTA cards, circle the area of application with a ballpoint pen or pencil.
3. Samples applied to FTA cards are now ready either for immediate downstream processing or archiving at room temperature.

Note: The recommended drying time for samples is not less than three hours at room temperature. This period has been determined by following the drying time of 125 µl of whole human blood at 18–22°C and 60% relative humidity using a sample weight loss method. Users will need to determine whether different sample types or volumes or different local conditions will require longer or shorter drying times. Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

Overnight Bacterial Cultures:

1. Take about 65 µl of overnight culture and apply to FTA (indicating FTA Card is recommended). If applying to non-indicating FTA, circle the area of application with a ballpoint pen or pencil.
2. After drying, samples applied to FTA cards are now ready either for immediate downstream processing or archiving at room temperature.

Note: The recommended drying time for samples is not less than three hours at room temperature. This period has been determined by following the drying time of 125 µl of whole human blood at 18–22°C and 60% relative humidity using a sample weight loss method. Users will need to determine whether different sample types or volumes or different local conditions will require longer or shorter drying times. Prior to shipping of samples it is highly recommended that they be allowed to dry completely. Do not heat to shorten the drying period.

Archiving of samples on FTA Cards:

Biological samples applied to FTA cards should be archived at room temperature in a Multi-Barrier Pouch (Whatman Cat. No. WB100036 or WB100037) with a desiccant (WB100003) or stored in a humidity-controlled, cool, dry environment. Samples for RNA analysis should be stored at -20°C or -70°C for long term storage.

Preparation of Sample DNA for Downstream Analysis:

1. Take a sample disc from the desired sample spot using a coring device.
For blood samples and bacterial genomic DNA samples, a 1.2 mm disc is recommended. For all other sample types, use a 2.0 mm disc. Place sample disc in a PCR amplification tube.
2. Add 200 µl of FTA Purification Reagent (Whatman Cat. No. WB120204) to PCR tube.
3. Incubate for 5 minutes at room temperature, (the tube may be given moderate manual mixing if desired).
4. Remove and discard all spent FTA Purification Reagent using a pipette.
5. Repeat steps 2–4 twice, for a total of three washes with FTA Purification Reagent*.
6. Add 200 µl of TE⁻¹ Buffer (10 mM Tris-HCl, 0.1 mM EDTA, pH 8.0) to PCR tube.
7. Incubate for 5 minutes at room temperature.
8. Remove and discard all spent TE⁻¹ Buffer with a pipette.
9. Repeat steps 6–8 once for a total of two washes with TE⁻¹ Buffer.
10. Allow disc to dry at room temperature for about three hours, or heat assist the drying of disc at 56°C for 10 minutes. The FTA disc is now ready for PCR.

* If purifying sample disc from a plant source or bacterial culture, only two washes with the FTA Purification Reagent are necessary.

Downstream PCR Applications:

The washed and dried disc is now ready for PCR analysis. Assuming a 25 µl reaction, we recommend a 1.2 mm disc for blood and 2.0 mm disc for buccal and bacterial samples. The disc is included in the PCR reaction. No alterations in the PCR reaction mix or cycling conditions are required.

Use of Direct Amplification STR profiling kits with FTA

The use of FTA cards as a storage medium for DNA samples taken from both victims and offenders is well established and integral to many forensic workflows. The most modern development of forensic STR profiling is the use of Direct reagents, which enable the user to increase throughput by reducing the time required to go from sample to result by eliminating the washing steps normally required to remove PCR inhibitors. Both PowerPlex® 18D and Identifiler® Direct have been evaluated for use with punches taken directly from FTA cards. Protocols for using FTA cards with these kits are supplied by the manufacturers in their respective User Guides.

Legal.

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PowerPlex is a trademark of Promega.

Identifiler is a trademark of Applied BioSystems.

In the US the FTA card may be sent via First-Class Mail, Priority Mail, Express Mail, or Package Services mail by following the US mailing packaging requirements (including, where relevant, for Exempt Human or Animal Specimens). Information on the US requirements and section 10.17.9, exempt human or animal specimens, can be found at this url address:

<http://pe.usps.com/text/dmm300/601.htm#wp1194388> In other jurisdictions please check your local mailing laws and regulations before sending sample-bearing FTA cards through the mail. GE Healthcare accepts no liability for your compliance or failure to comply with local mailing laws and regulations (US or otherwise) and it is your responsibility to ensure compliance with all applicable requirements.

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