

**PRODUCT INFORMATION SHEET**

**Intended Use**

Circulating Tumour Cell TransFix/EDTA Vacuum Blood Collection Tubes (CTC-TVTs) are intended for collection and storage of human whole blood specimens for CTC evaluation. This product is for Research Use Only (RUO).

**Summary and Principles**

Circulating tumour cells (CTCs) are cells from the tumour which have invaded and moved through the walls of nearby blood vessels and circulate in the blood stream. These circulating tumour cells can invade the walls of the capillaries at a distant location and migrate into the surrounding tissue which can result in the formation and growth of secondary tumours; a process called metastasis.

The number of rare circulating tumour cell populations present in human blood is very low, therefore the usefulness of CTC assessments depends upon accurate cell counts and the corresponding analysis of molecular targets. Addition of TransFix to blood samples at the time of collection has been shown to significantly extend the integrity of CTCs within the samples [1, 2].

CTC-TVTs consist of purple capped polyethylene terephthalate tubes that are designed for direct-draw blood collection. They contain a solution of TransFix and K3EDTA at the correct volume to simultaneously stabilise and anti-coagulate whole blood at the time of collection. The stabiliser acts by preserving CTCs until processing and analysis can be performed.

CTC-TVTs are a 9ml final draw volume tube. The vacuum contained within the tube ensures that the TransFix/EDTA reagent is administered at the correct ratio. CTC-TVTs are sterilised by gamma radiation.

**Reagents**

CTC-TVTs contain TransFix and the anticoagulant, K<sub>3</sub>EDTA. TransFix is a clear green liquid containing formaldehyde and other chemicals.

**Disposal**

TVTs (EU Waste Code 18-01-06) contains formaldehyde which should be disposed of in accordance with local regulations. Avoid disposing into drainage systems and the environment. Once the TVT contains a biological sample it must be considered an 'Absolute Hazard' (EU Waste Code 18-01-03) and disposal is in accordance with local regulations regarding clinical waste.

**Precautions and Warnings**

1. This product is for Research Use Only.
2. Do not freeze the CTC-TVTs, or blood specimens collected in CTC-TVTs. Incubation times or temperatures other than those specified may lead to erroneous results.
3. Do not use CTC-TVTs after the expiration date on the tubes and packaging.
4. Only use CTC-TVTs to collect human whole blood specimens. Do not use tubes for collection of materials to be injected into patients.
5. Do not dilute or add other components to CTC-TVTs.
6. **Under-filling of tubes will result in an incorrect blood-to-additive ratio and may lead to incorrect analytic results or poor product performance.**
7. CTC-TVTs should only be used by trained phlebotomists.
8. Do not transfer specimens that have been collected in other tubes or specimens treated with other preservatives / anticoagulants into CTC-TVTs.
9. Do not use cell viability stains on blood collected in CTC-TVTs as they are fixed instantaneously.
10. Do not re-use CTC-TVTs.
11. TransFix/EDTA treated blood and all materials coming into contact with it should be handled as if capable of transmitting infection.
12. Avoid contact of TransFix/EDTA and TransFix/EDTA treated blood samples with the skin and mucous membranes. The cell preservative is considered an irritant and any contact should be washed off with soap and water immediately.
13. TransFix/EDTA does not contain any antimicrobial reagents. Microbial contamination should be avoided or erroneous results may occur.
14. SDS can be obtained at [www.cytomark.co.uk](http://www.cytomark.co.uk) or by calling +44(0)1280 827460.

**Prevention of Backflow**

Since CTC-TVTs contain chemical additives, it is important to avoid possible backflow from the tube. To guard against backflow:

1. Keep patient's arm in the downward position during the collection procedure.
2. Hold the tube with the cap in the uppermost position so that the tube contents do not touch the stopper in the cap or the end of the needle during sample collection.
3. Release tourniquet once blood starts to flow in the tube, or within 2 minutes of application.
4. Tube contents should not touch stopper in cap or the end of the needle during collection.

**Indications of Deterioration of unused CTC-TVT**

1. Cloudiness or precipitate visible in the TransFix.
2. TransFix change from liquid to solid.

3. If indications of product deterioration occur, do not use CTC-TVTs and contact Cytomark immediately on: +44(0)1280 827460 or [support@cytomark.co.uk](mailto:support@cytomark.co.uk).

**NOTE:** The TransFix within the tubes may change from green to grey/blue colour. This does not affect its functional performance.

**Storage Conditions and Stability**

1. All CTC-TVT products are shipped at ambient temperature (2 - 25°C). Additional insulation may be required for shipment during extreme temperature conditions.
2. **Tubes in an unopened pouch are stable at 2 - 8°C until the expiration date on the label.**
3. Once the pouch is opened, CTC-TVTs have a shelf life of **6 months** from the date that the pouch is opened, or until the expiration date on the label.
4. CTC-TVTs removed from an opened pouch must be used within 2 hours at room temperature (18 - 25°C), otherwise returned to 2 - 8°C storage.
5. Do not freeze CTC-TVTs.

**Instructions for Use**

1. Collect blood by venepuncture according to normal phlebotomy practice. CTC-TVTs are compatible with shielded needle devices from most major manufacturers.
2. Fill tube completely. Blood will be aspirated up to the correct total volume and no further. This is important to avoid an incorrect TransFix/EDTA to blood ratio that could affect results.
3. Remove the CTC-TVT from the needle holder and immediately mix by gentle inversion 10 times to distribute the TransFix/EDTA throughout the blood sample. Inadequate or delayed mixing may result in inaccurate test results. Do not vortex.
4. After collection, store/transport the blood filled CTC-TVTs at room temperature 18 - 25°C for up to 5 days.
5. Heavier cells and blood components will sediment over the 5 day storage period, forming two distinct layers. This is normal. Re-suspend the cells thoroughly by gentle inversion 10 times.
6. Remove and reinsert the cap by grasping with a simultaneous twisting and pulling action, not by a 'thumb roll' method.
7. Identify and enumerate CTCs by preferred method such as flow cytometry.
8. **When treated with Transfix the dilution factor must be accounted for when calculating absolute cell counts. Adjust the absolute cell count by multiplying the output by 1.05.**

A certificate of analysis and a certificate of conformity can be provided with every batch of CTC-TVTs and is available at [www.cytomark.co.uk](http://www.cytomark.co.uk).

It is recommended that all antibody conjugates are validated in association with TransFix prior to use. A list of antibodies compatible with TransFix can be found at [www.cytomark.co.uk](http://www.cytomark.co.uk).

**References**

1. Assessment of circulating tumor cells with a novel, filtration-based method, in a phase IIIb multicenter study for postmenopausal, HER2- negative, estrogen receptor-positive, advanced breast cancer patients. Fasching et al., ASCO Meeting Abstracts Jun 17, 2013:591
2. A Novel Strategy for Detection and Enumeration of Circulating Rare Cell Populations in Metastatic Cancer Patients Using Automated Microfluidic Filtration and Multiplex Immunoassay. Magbanua, et al. PLoS ONE 10(10): e0141166

**Ordering Information**

Please call Cytomark on +44(0)1280 827460 or email [support@cytomark.co.uk](mailto:support@cytomark.co.uk) for assistance. Additional information can be found online at [www.cytomark.co.uk](http://www.cytomark.co.uk).

Product Descriptions	Catalogue Numbers
TransFix/EDTA Circulating Tumour Cell Vacuum Blood Collection Tube (2x 9ml tube)	CTC-TVT-09-02
TransFix/EDTA Circulating Tumour Cell Vacuum Blood Collection Tube (50x 9ml tube)	CTC-TVT-09-50

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