



STK® Sperm Tracker
STK Lab
DIRECTION FOR USE

Symbol definition:

REF Catalogue references: **AXO-STK-9240, AXO-STK-9210, AXO-STK-7045, AXO-STK-A3-20**

LOT Batch number

Recommended storage temperatures

Do not use if packaging is damaged

Keep away from light

Single use

Expiry date

See User Guide

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Product purpose:

STK Lab from STK® Sperm Tracker range is a presumptive test for the detection of human male semen.

STK Lab must be applied on all types of absorbent evidences such as fabrics (clothing, sheet, duvet cover, carpet, car seat, etc.).

Principle of the test:

STK Lab shows as a paper impregnated with reagents. Reagents react specifically with Acid Phosphatase found in human semen.

Presence of this enzyme on the studied evidence creates a reaction with STK Lab. The revealed specific stain can be visualized using a 365 nm UV light.

STK Lab does not damage DNA and does not alter potential DNA extraction and PCR amplification. It allows simple sample collection directly on the evidence in order to perform genetic analysis of the sample.

Provided material:

STK Lab paper: roll or sheet.

STK Lab paper has one side with a laminated surface (reading side), and one blotter side impregnated with reagents (analysis side). Small paper imperfection can sometimes be seen on paper surface. It does not alter test performances and are DNA free.

Additional material and reagents:

- Press (recommended, example: AXO-STK-P1 product)
- Sprayer with demineralized water.
- Portable UV light 365-366nm with visible light filter (e.g.: **Vilber VL 6.L or CAMAG UV lamp 4**). Be aware that each lamp is different from one another (power, background noise).

It is advised to check the detection performances with positive control sample (example: AXO-STK-PC-10 product). If in doubt about your UV light, contact AXO Science.

Protocol:

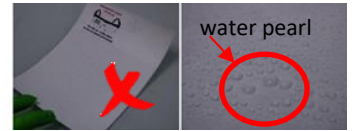
Beforehand: Personal Protective Equipment

It is advised to wear appropriate laboratory protective equipment (gloves, facemask, hygiene cap and lab coat) to prevent from contaminating STK Lab.

It is mandatory to wear UV-protective glasses when using UV light.

Analyse:

- Cut a piece of STK Lab** slightly larger than the evidence to be screened
- Using the spray, **moisten generously the absorbing side** (blotting paper side) of STK Sperm Tracker with demineralized water (approximately 150 to 200 ml/m² i.e. ~0.5 to 0.6 fl. oz./yd²). The paper to be moistened must be saturated with water.



- Cover evidence** to be studied with STK Lab paper: moisten absorbing side against the evidence.
- Place the ensemble under a press with the STK Lab paper on it**, with the laminated reading side up.
- Press strongly during 3 minutes**. A longer pressure time is possible up to 10 minutes especially for thicker and absorbent fabrics. A longer press is possible, but it may increase the risk to generate spurious signals. Evidence and STK Sperm Tracker must not move during pressing and when opening the press (STK Lab can easily be pinned).
- Put UV protective glasses** on and switch on the UV light.
- In the dark, **make the revelation** by positioning UV light approximately 50 cm (~20 inches) above the laminated reading side.
- See the result** (see results interpretation hereafter).
- Dispose the STK Lab paper piece** (see disposal conditions hereafter).

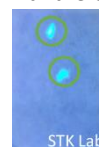
Protocol summary :

Cut a STK Lab piece the size needed to fit the evidence	Spray the absorbing side of the STK Lab paper with demineralized water (must be saturated)	Cover the area to be tested with wet absorbing side against the item (STK Lab paper can be pinned to the fabric)	Press between 3 and 10 minutes (time is dependent on the thickness of the fabric)	Observe semen stains with a 365nm UV light: only semen stains will glow in a blue color

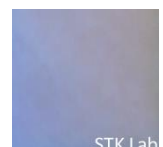
Results interpretation:

Once analysis is completed according to the above protocol:

- Presumptive test is **positive**: a blue fluorescent signal is detected with the UV light.
- Presumptive test is **negative**: no fluorescent signal is detected with the UV light.



« Positive » result



« Negative » result

Disposal:

Used STK Lab must be discarded in an appropriate container (see Waste Management Policy).

Compatibility:

STK Lab is fully compatible with other forensic solution such as SERATEC® AmylasePaper ou Phadebas Amylase Test (saliva) but also with BLUESTAR® forensic (blood). Always use STK Lab **before** BLUESTAR® forensic or luminol.

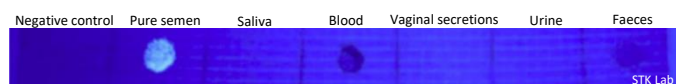
Sensitivity:

STK Lab allows to detect semen traces diluted to 1:20 and to 1:100 in optimal conditions for traces found on thin fabrics.

Specificity:

STK Lab is only specific to human male semen.

STK Lab will not show any positive results if it is applied on other body fluids such as saliva, blood or urine.



Source: Borges E, Degiuli A, Desrentes S, Popielarz C, Blum LJ, et al. (2017) Evaluation of the SPERM TRACKER™ for Semen Stains Localization on Fabrics. J Forensic Res 8: 380. doi:10.4172/2157-7145.1000380

A signal close to a positive result can appear with the presence of residues of bleach, oxidizing agents, household detergents or moulds. These signals are weaker, less "blue" and appear much later than the recommended time (3 to 10 minutes maximum); they are easily recognizable from a positive result.

STK Lab allows the detection of old semen stains (several years) in normal storage conditions.

Additional analysis:

If in doubt about the presence of a signal on the evidence, it is recommended to carry out a confirmatory test, such as PSA or sperm cells research.

After STK Lab use, the semen trace can be collected, **after swabbing from the fabric** then quantified and analyzed to determine the genetic profile.

Contraindications and advises:

- Adding chemical or biological products not mentioned in the protocol may alter test effectiveness
- The simultaneous use of the different products in the STK Sperm Tracker™ range is strongly discouraged as it may result in significant false negatives. STK Lab and STK Spray (and vice versa) should not be used on the same evidence.
- With a washed fabric (in the washing machine) there are few chance to get a positive result by using STK Lab. During the washing cycle, the sperm fluid is diluted and the garment is potentially mixed with other garments, so the result may be biased.
- The use of a positive control to correctly identify the semen signal is essential. The difference with a potential semen stain is clearly noticeable.
- Once the semen trace is revealed, sampling should be done from the original fabric and not on the absorbent side of the STK Lab.
- If your laboratory is not equipped with a press, in order to get a sufficient pressure of the STK Lab paper against the piece, it is possible to use a high weight (minimum 20 kg/m²) and distributing the pressure evenly.
- The exposure of the kit to physical changes such as exposure to sunlight or extreme temperatures or pressures, will lead to product deterioration.

Conditions of use:

Keep away from light, and heat.

Storage must be at room temperature: between +14°C (+57°F) and +30°C (+86°F).

If these values are exceeded, use a positive control test to validate the product.

Storage before opening:

Expiry date will be found on product packaging. Do not use after expiry date.

Storage after opening:

It is recommended to use the product within 3 months after opening. Once wet, the STK Lab paper must be used rapidly, within 30 minutes and cannot be reused and must be discarded.

Quality standards:

The STK Sperm Tracker™ products range are manufactured according to the European quality standards ISO 13485. Each batch release is preceded by a quality control (performances and hDNA free), STK Lab is therefore ISO 18385 certified.

Literature:

- Borges E, Degiuli A, Desrentes S, Godfrin D, Popielarz C, et al. Evaluation of the SPERM TRACKER™ for Semen Stains Localization on Fabrics. Journal of Forensic Research, 8: 380 (2017). doi:10.4172/2157-7145.1000380. <https://www.hilarispublisher.com/open-access/evaluation-of-the-sperm-tracker-for-semen-stains-localization-on-fabrics-2157-7145-1000380.pdf>
- Kabile F., Poussard A., Angelini N., Calvayrac G., De Mari C., Hubac S. Comparative study between a new forensic reagent STK™ SPERM TRACKER versus multispectral Alternative Light Sources (ALS) to detect specifically sperm traces on swab and fabrics in real sexual assault cases. ISHI 2021, poster n°4.
- Sonoda A., Nagata A., Tomonari K., Ono T., Tomisaka Y., Nishi E. Establishment of the new semen identification method and the examination to practical introduction. J-STAGE (2021). <https://doi.org/10.3408/jafst.824>
- T.Sijen, S.Harbison. On the Identification of Body Fluids and Tissues: A Crucial Link in the Investigation and Solution of Crime. Genes, 12(11), 1728. S (2021). <https://doi.org/10.3390/genes12111728>
- Utilising Crime-lites® for the visualisation of fluorescence from STK Sperm® Tracker, SEPTEMBER 2021. www.fosterfreeman.com

INFORMATION AND TECHNICAL SUPPORT

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