

## SERATEC® AmylasePaper

REF: AMY-P/25, AMY-PS/25

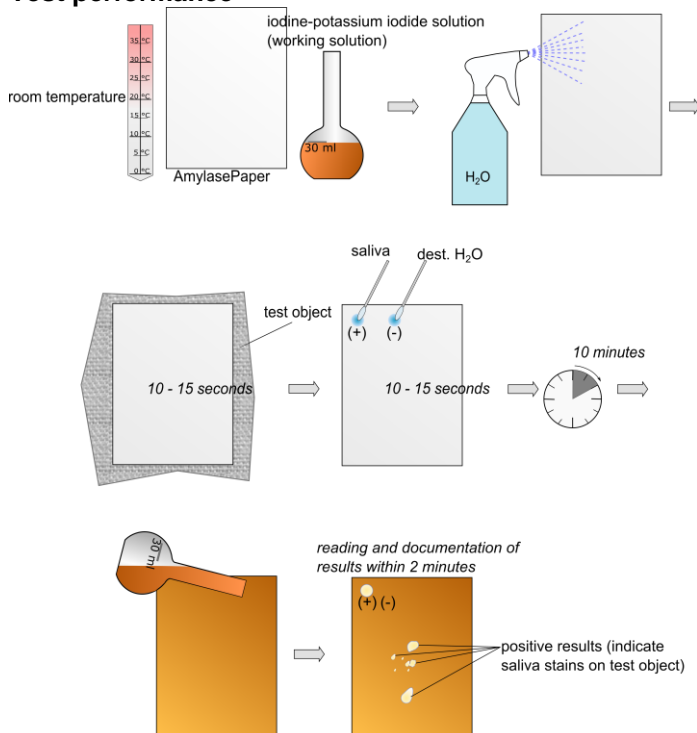
### Application

The SERATEC® AmylasePaper is used for the quick and preliminary representation (*mapping*) of amylase to identify traces of saliva on forensic evidence.

### Materials

- 25 DIN A4 sheets of AmylasePaper
  - 50 ml iodine-potassium iodide sol iodide solution (stock solution) in amber glass bottle (AMY-PS only)
  - Instructions for use
- Additionally required: stopwatch or timer, 30 ml volumetric flask, distilled water

### Test performance



1. Bring all test components to room temperature before performing the test.
2. Moisten the AmylasePaper with distilled water.
3. Place the test object on a flat surface, e.g. a glass plate.
4. Place the moistened AmylasePaper on the test surface and press down firmly for 10 – 15 seconds (wearing gloves).  
Alternatively, the test object can also be pressed on the AmylasePaper.
5. Remove the AmylasePaper from the test surface and place on a tray or other level surface – avoid air bubbles under the AmylasePaper which may lead to heterogeneous colour intensity and make the interpretation of results more difficult.
6. Press the reference controls (positive and negative) on the AmylasePaper for approx. 10 – 15 seconds also.
7. Incubate the AmylasePaper at room temperature for 10 minutes.
8. Add iodine-potassium iodide solution (working solution) to the AmylasePaper – the entire paper should be covered with the solution.
9. Read the result – The result should be read and documented (photo if necessary) within 2 minutes, as the colouration of the AmylasePaper will fade within approx. 10 minutes.

#### Reference controls:

Positive: Cotton swab with saliva

Negative: Cotton swab with distilled water

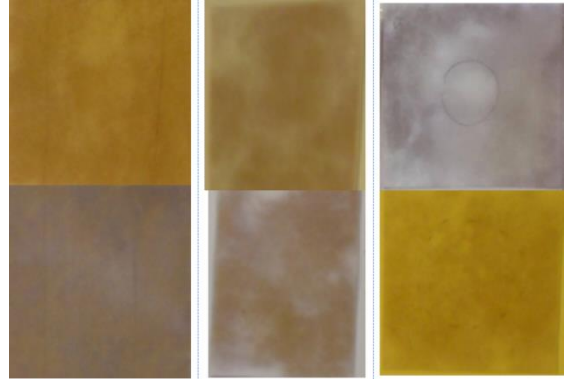
**Note:** The AmylasePaper can be cut if smaller surface areas are to be examined.

### Interpretation of results

The result should be read and documented within 2 minutes, as the colouration of the AmylasePaper will fade within approx. 10 minutes.

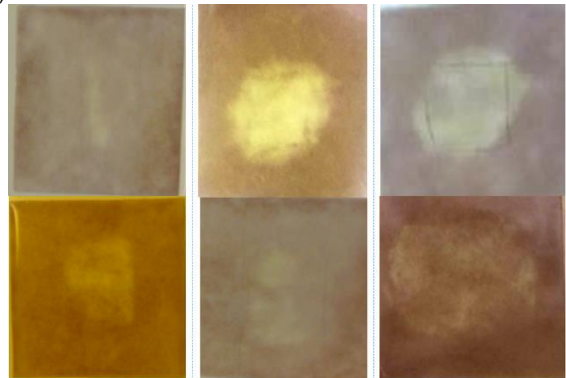
**Note:** Air bubbles below the AmylasePaper may cause light-coloured areas compared to the surrounding areas and should therefore be avoided at all times.

**Negative result** (no amylase on the test object or amylase concentration below the limit of detection):



The AmylasePaper is dyed throughout. Colour intensity may vary, but no separate white areas are visible.

**Positive result** (amylase detected; indicates traces of saliva on the test object):



White areas are visible on the paper. These are often bordered by bluish colouring. Positive results may vary regarding their exact colouring and shape.

**Invalid result** (no usable result):

The positive and/or negative control indicates an incorrect result. The detection should be repeated with a new paper. Follow all instructions and ensure that the entire paper is covered with the working solution. Also avoid air bubbles under the AmylasePaper at all times and read the result within the specified time.

### Preparation of the test solutions

#### Stock solution

50 ml iodine-potassium iodide solution (stock solution) are included in the scope of supply (AMY-PS only). It can be prepared as required according to the following composition (50 ml):

Dissolve 0.5 g potassium iodide in 50 ml distilled water, add 0.25 g iodine and stir until all components have dissolved completely. Store the finished solution in an amber glass bottle.

#### Working solution

The working solution is freshly prepared before the test is performed. Approx. 30 ml working solution is required for one DIN A4 AmylasePaper. For smaller cut pieces of AmylasePaper, approx. 1 ml working solution is required per 10 cm<sup>2</sup> AmylasePaper. The working solution is prepared as follows (30 ml):

Dilute 2 ml stock solution with 28 ml distilled water.

## Further analyses

For the further analysis of positive results, we recommend using the **SERATEC<sup>®</sup> AmylaseTest** for the human-specific detection of  $\alpha$ -amylase. To perform the test, a piece of the test object approx. 1 cm<sup>2</sup> in size is extracted in the corresponding buffer. The detection of human  $\alpha$ -amylase using the **SERATEC<sup>®</sup> AmylaseTest** takes approx. 10 minutes. In addition, the extracted sample is suitable for STR typing.[1]

## Safety information

Forensic samples are potentially infectious material which should be examined with the appropriate care and only when suitable protective measures (e.g. gloves, laboratory clothing) are applied. Materials used to perform the test should be autoclaved before disposal, as they contain potentially infectious material. Observe the following instructions:

- Do not use the product if damaged.
- Only open the protective bag of the AmylasePaper immediately before use and reclose.
- Do not use the product after the expiration date.
- The storage and working solutions contain iodine and potassium iodide. Observe applicable GHS standards.
- Do not freeze the test components.

## Background

The enzyme  $\alpha$ -amylase is used in the body to break down polysaccharides and occurs in various organs and body fluids. Its concentration in saliva and pancreatic fluid is particularly high. The  $\alpha$ -amylase found in saliva (also called ptyalin) initially breaks down insoluble starch into soluble forms (amylopectin, erythropectin and achropectin), then breaking those down further into maltose. SERATEC<sup>®</sup> AmylasePaper uses this property in the *iodine-starch reaction* for the detection of saliva. AmylasePaper contains starch, which forms a blue **iodine-starch complex** when an iodine-potassium iodide solution is added. In the presence of  $\alpha$ -amylase, the starch is broken down and the blue complex is not formed. The different colouration of AmylasePaper can therefore **map traces of saliva on forensic evidence**. [2–4] SERATEC<sup>®</sup> AmylasePaper can be used in the following forensic applications:

- Representation of the distribution of traces of saliva on evidence (*mapping*).
- Localisation of traces of saliva for further analyses (e.g. identification of saliva using the SERATEC<sup>®</sup> AmylaseTest or DNA analyses).

## Sensitivity

SERATEC<sup>®</sup> AmylasePaper can be used to detect quantities of min. 100 mIU/ml amylase. Human saliva is successfully detected up to a dilution of 1:1000.

## Specificity

SERATEC<sup>®</sup> AmylasePaper reacts with all amylases breaking down starches. It is not human-specific. It does not show positive results with other body fluids such as blood, sweat or seminal fluid. Due to the possible presence of pancreatic amylases, traces of stool may lead to positive results.

It is recommended to verify positive results with the human-specific SERATEC<sup>®</sup> AmylaseTest.

## Storage and shelf life

- Store AmylasePaper and stock solution at +2 to +30 °C (38 to 86 °F).
- Keep AmylasePaper in the closed protective bag until use.
- Do not use after the specified expiration date.

## Quality features

Our products are manufactured according to the quality standards of European standard ISO 9001. The performance characteristics are confirmed during final quality control in application of the following standard:  *$\alpha$ -Amylase from human saliva* (Lee Biosolutions, 120-10 or Sigma Aldrich, A1031).

Please contact us if you have any questions or require more information.

## Literature

- [1] A. Barbaro, P. Cormaci, S. Votano, A.L. Marca, Evaluation study about the SERATEC<sup>®</sup> rapid tests, *Forensic Sci. Int. Genet. Suppl. Ser. 5* (2015) e63–e64. doi:10.1016/j.fsigss.2015.09.025.
- [2] R.E. Gaensslen, *Sourcebook in forensic serology, immunology, and biochemistry*, University of Michigan Library, 1983.
- [3] Stadler, Christian, G. Roca, M. Chan, Developmental Validation of SERATEC<sup>®</sup> AmylasePaper for the Preliminary Detection of Saliva on Samples of Forensic Evidence, SERATEC GmbH, n.d.
- [4] J. Wurster, D.L. Laux, A rapid amylase mapping procedure, *Midwest Assoc Forensic Sci Newsl.* (1999) 48–49.

## Symbols

