



**SYPHILIS SEROLOGY KIT**  
**DIRECTIONS FOR USE**

**RPR CARBON KIT: For Detection Of Syphilis.**

**SUMMARY**

At one time, syphilis was a major medical disease with a host of different manifestations transmitted primarily through sexual contact. The advent of penicillin in 1943 changed this. The etiologic agent of syphilis is *Treponema pallidum*, a spiral bacterium (spirochete). The spirochete causes some damage to the heart and the liver, releasing some tissue fragments. The patient's immune system produces antibodies, called reagins, against these fragments. There are two different techniques for the detection of syphilis. TPHA tests, which detect antibodies to *Treponema pallidum*, and non-treponemal serologic tests, which detect Reagin in infected people.

**PRINCIPLE**

When used by the recommended techniques, the reagent will agglutinate (clump) in the presence of reagin. No agglutination usually indicates the absence of reagin (see **Limitations**).

**KIT DESCRIPTION**

Lorne RPR Carbon Kit is a non-treponemal serologic test for the detection of syphilis. The RPR Carbon Antigen contains micro particulate carbon, which aids in the microscopic reading of results. All the reagents are supplied at optimum dilution for use with all recommended techniques without the need for further dilution or addition. For lot reference number and expiry date see **Vial Labels**.

**STORAGE**

Do not freeze. Reagent vials should be stored at 2 - 8°C on receipt. Prolonged storage at temperatures outside this range may result in accelerated loss of reagent reactivity.

**SPECIMEN COLLECTION**

Specimens should be drawn with or without anticoagulant using an aseptic phlebotomy technique. If testing is delayed specimens can be stored at 2-8°C for 7 days or for up to 3 months at or below -20°C. Specimens must be free from bacterial contamination, fibrin, haemolysis and lipaemia.

**PRECAUTIONS**

1. The kit is for *in vitro* diagnostic use only.
2. Do not use kit past expiration date (see **Vial and Box Labels**).
3. Protective clothing should be worn when handling the reagents, such as disposable gloves and a laboratory coat.
4. No known tests can guarantee products derived from human or animal sources are free from infectious agents. Care must be taken in the use and disposal of each vial and its contents.
5. RPR Positive Control: H319 - Causes serious eye irritation. Follow the precautionary statement given in the SDS.

**DISPOSAL OF KIT REAGENT AND DEALING WITH SPILLAGES**

For information on disposal of kit reagent and decontamination of a spillage site see **Material Safety Data Sheets**, available on request.

**CONTROLS AND ADVICE**

1. It is recommended the RPR Positive and Negative Controls be tested in parallel with each batch of tests. Tests must be considered invalid if controls do not show expected results.
2. Shake all the reagents well before use to ensure homogeneity.
3. Do not interchange components between different kits.
4. The circles on the agglutination cards should never be touched with fingers, as this may invalidate the test results.
5. Use of kit and interpretation of results must be carried out by properly trained and qualified personnel in accordance with the requirements of country where reagents are in use.
6. The user must determine suitability of the kit for use in other techniques.

**KIT COMPONENTS PROVIDED**

- 1) RPR Carbon Antigen (Red Label): Carbon particles coated with a lipid complex (cardiolipin, lecithin and cholesterol) in phosphate buffer 20 mmol/L, pH 7.0 containing a preservative.
- 2) RPR Positive Control (Red cap): Artificial serum with reagin titer  $\geq 1/4$ .
- 3) RPR Negative Control (Blue cap): Animal serum containing a preservative
- 4) Dispensing bottle (1 x 2 ml).
- 5) Dispensing Needle (x1).
- 6) Disposable agglutination slides.
- 7) Plastic stirrers.

**MATERIALS AND EQUIPMENT NOT SUPPLIED**

- a) Pipette capable of accurately delivering 50  $\mu$ L
- b) Mechanical rotating table capable of rotating at 80-100 rpm.
- c) 9 g/L saline solution.

**QUALITATIVE TECHNIQUE**

1. Allow the reagents and samples to reach room temperature. The sensitivity of the test may be reduced at low temperatures.
2. Place 50  $\mu$ L of the sample and one drop of each Positive and Negative controls into separate circles on the slide test.
3. Swirl the RPR-carbon reagent gently before using. Invert the dropper assembly and press gently to remove air bubbles from the micropipette.
4. Place the micropipette in a vertical position and perpendicular to the slide, and add one drop (20  $\mu$ L) of this reagent next to the samples to be tested.
5. Mix the drops with a stirrer, spreading them over the entire surface of the circle. Use different stirrers for each sample
6. Place the slide on a mechanical rotating table at 80-100 r.p.m. for 8 min. False positive results could appear if the test is read after more than 8 minutes.

**INTERPRETATION OF QUALITATIVE RESULTS**

1. **Reactive:** Visible agglutination (medium to large clumps) constitutes a positive result and within the accepted limitations of the test procedure, indicates the presence of reagin.
2. **Weak-Reactive:** Weak agglutination (small clumps) around the periphery of the test area constitutes a weak positive result and within the accepted limitations of the test procedure, indicates the presence of reagin.
3. **Negative:** No agglutination constitutes a negative result and within the accepted limitations of the test procedure, indicates the absence of reagin.

**SEMI QUANTITATIVE TECHNIQUE**

1. The semi-quantitative test can be performed in the same way as the quantitative technique using dilutions of the serum in 9 g/L saline solution.
2. Make doubling dilutions of specimen as follows:

Dilution	Serum	Saline
1/2	100 $\mu$ L undiluted serum	100 $\mu$ L
1/4	100 $\mu$ L 1/2 diluted serum	100 $\mu$ L
1/8	100 $\mu$ L 1/4 diluted serum	100 $\mu$ L
1/16	100 $\mu$ L 1/8 diluted serum	100 $\mu$ L

3. Test the specimen dilutions in the same way as for the quantitative technique above.
4. Read the test and note the last positive dilution series.

**STABILITY OF THE REACTIONS**

Slide tests should be interpreted straight after the 8-minute rotating period to avoid the possibility that a negative result may be incorrectly interpreted as positive due to drying of the reagent.

## LIMITATIONS

1. RPR carbon test is non-specific for syphilis. All Reactive samples should be retested with treponemic methods such as TPHA and FTA-Abs to confirm the results.
2. A Non Reactive result by itself does not exclude a diagnosis of syphilis. Clinical diagnosis should not be made on findings of a single test result, but should integrate both clinical and laboratory data.
3. False positive results have been reported in diseases such as infectious mononucleosis, viral pneumonia, toxoplasmosis, pregnancy and autoimmune diseases.
4. Bilirubin ( $\leq 20$  mg/dL), hemoglobin ( $\leq 10$  g/L) and lipids ( $\leq 10$  g/L), do not interfere. Rheumatoid factors ( $\geq 300$  IU/mL), interfere. Other substances may interfere<sup>5</sup>.
5. False positive or negative results may also occur due to:
  - a) Not expelling air from end of needle
  - b) Not maintaining dispensing bottle and needle in a vertical position when dispensing the antigen.
  - c) When transferring the specimen from the collecting tube some of the specimen being drawn up in to the teat
  - d) Contamination of test materials
  - e) Improper storage of test materials or omission of reagents
  - f) Deviation from the recommended techniques

## SPECIFIC PERFORMANCE CHARACTERISTICS

1. The kit has been characterised by all the procedures mentioned in the **Recommended Techniques**.
2. Prior to release, each lot of Lorne RPR Syphilis Kit is tested by the **Recommended Techniques** to ensure suitable reactivity.
3. The reagent sensitivity is calibrated against the "Human Reactive Serum" from the CDC (Centres for Disease Control) and comparable to the RPR reagent from Becton Dickinson.
4. **Prozone effect:** No prozone effect was detected up to titers  $\geq 1/128$ .
5. **Diagnostic sensitivity:** 100%
6. **Diagnostic specificity:** 100 %.

## DISCLAIMER

1. The user is responsible for the performance of the kit by any method other than those mentioned in the **Recommended Techniques**.
2. Any deviations should be validated prior to use using established laboratory procedures.

## BIBLIOGRAPHY

1. George P. Schmid. Current Opinion in Infectious Diseases 1994; 7: 34-40.
2. Sandra A Larsen et al. Clinical Microbiology Reviews 1995; 8 (1): 1-21.
3. Sandra Larsen et al. A manual of Test for Syphilis American Public Health Association 1990: 1-192.
4. Joseph Earle Moore et al. Gastrointestinal Haemorrhage 1952; 150(5): 467-473.
5. Young DS. Effects of drugs on clinical laboratory test, 4th ed. AACC Press, 1995.

## AVAILABLE KIT SIZES








Kit Size	Catalogue Number
150 Tests Per Kit	044150A
500 Tests Per Kit	044500A

For the availability of other sizes, please contact:

### Lorne Laboratories Limited

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## TABLE OF SYMBOLS

	Batch Number		<i>in-vitro</i> Diagnostic
	Catalogue Reference		Store At
	Expiry Date		Manufacturer
	Read Pack Insert		