

### Certificate of Accuracy

Type:	Temp-Chex Red Spirit, Refrigerator	Range:	-5° to 15°C
Serial Number Series:	S86188-S87406	Streck Catalog #:	240043
Lot #:	72720550	Date of Certification:	06-30-2017
		In Use Date:	_____

This is to certify the thermometer bearing the serial number within the series shown above was compared with a Standard whose calibration is traceable to the National Institute of Standards and Technology (NIST) and Deutscher Kalibrierdienst (DKD), and was found to be accurate to within  $\pm 0.5^\circ\text{C}$ . The Standard Serial Numbers calibrated by NIST and DKD are #844016 (NIST), #730 (DKD) for ranges from  $-30^\circ\text{C}$  to  $+10^\circ\text{C}$ ; and #878708 (NIST), #733 (DKD) for ranges  $0^\circ$  to  $+50^\circ\text{C}$ .

The Temp-Chex manufacturer is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 by A2LA.

#### INTENDED USE

The Temp-Chex thermometer assembly is designed as a convenient device for monitoring the temperature when storing a variety of products including clinical laboratory reagents, controls, and patient specimens.

#### PRINCIPLE

A thermometer is the main component of the system. It is manufactured to meet NIST/DKD standards of accuracy and is certified traceable to NIST/DKD standards. Temp-Chex is accurate to  $\pm 0.5^\circ\text{C}$ . Temp-Chex is not a NIST or DKD thermometer.

#### PRECAUTIONS

SDS can be obtained at [www.streck.com](http://www.streck.com), by calling Streck at 800-843-0912, or by calling your local supplier.

#### COMPONENTS

A short stem bulb immersion thermometer is inserted through a rubber stopper into a 10 ml vial containing a solution of glycol. The thermometer and vial are enclosed in a plastic sleeve; **DO NOT REMOVE FROM THE PLASTIC SLEEVE**. The plastic sleeve is a safety feature and will contain fluid and glass should breakage occur. This assembly can be attached magnetically or adhesively to surfaces.

#### DEFOGGING OF SLEEVE

Occasionally when the Temp-Chex sleeve is exposed to warm air, a fog may form on the sleeve making it difficult to read the thermometer. Streck has treated the sleeve with an anti-fogging material. Over time this material can lose its effectiveness. If the plastic sleeve is fogging, Streck recommends an application of ordinary eye glass defogger to the outside of the sleeve.

#### CALIBRATION STATEMENT

Prior to shipment, Temp-Chex thermometers are stored in a controlled environment. With proper care, the thermometer should maintain its accuracy. Due to use in diverse applications and handling, there is no precise way to predict how long calibration will be maintained. As with any thermometer, drift is a possibility and accuracy can be affected by shock, aging, temperature and contamination through daily use. **Periodic recalibration or verification should be scheduled by each laboratory in accordance with its accrediting agency and/or established procedure.** At a minimum, annual recalibration or verification from the date the thermometer is put "in use" is good lab practice. A space is provided at the top of the Certificate of Accuracy to record the "in use" date. The date of certification listed for this thermometer is for reference use only. Please contact Streck Technical Services at 800-843-0912 or [technicalservices@streck.com](mailto:technicalservices@streck.com) with any questions.

#### INSTRUCTIONS FOR USE

1. **Visually inspect the thermometer immediately after unpacking.** The Temp-Chex can be placed directly into service provided there is no fluid separation inside the thermometer column. Gaps or breaks in the fluid are not a product defect. **If the fluid has separated, see Directions for Uniting Fluid Separation.**
2. Mounting Instructions
  - a. Temp-Chex must be stored in the upright position, bulb down. Prior to attachment, determine if the wall is ferrous metal and will allow use of the magnetic section. If so, make sure the surface is clean and free of any moisture or frost. To utilize the magnet, remove the second magnet from the magnet already affixed to the Temp-Chex and attach the entire Temp-Chex to the surface. Verify that it will hold properly.
  - b. If the wall is not ferrous metal or if the surface does not provide proper magnetic attraction, the adhesive surface of the magnets can be used. Once again, the surface should be clean and dry. First check that the two magnetic parts adhere to each other (if incorrectly aligned, the magnets will repel each other). Maintain proper orientation of the magnetic strip when attaching it to the freezer, incubator or refrigerator wall. Remove paper backing from the second magnet, attach the adhesive side to the wall and allow a few minutes to establish the appropriate bonding prior to attaching the magnet already affixed to the Temp-Chex. It is safest to attach the Temp-Chex to walls in such a position that the Temp-Chex can also be supported by a shelf. However, provided the appropriate attachment procedure has been followed, the Temp-Chex should remain stationary.

#### DIRECTIONS FOR UNITING FLUID SEPARATION

Occasionally, fluid separation occurs during shipping or during normal use. This separation is evidenced by single or multiple breaks in the column, fluid reservoir at the bottom or expansion bulb at the top of the thermometer. If any of these are obvious or if the thermometer does not seem to be functioning properly, the following procedures should be followed to correct the problem.

Before attempting the following methods, the thermometer must be removed from the protective sleeve and glycol-filled vial. To remove the thermometer from the vial, hold the vial in an upright position and use a gentle twisting motion. CAUTION: THE THERMOMETER IS MADE OF GLASS AND CAN EASILY BE BROKEN. IT IS RECOMMENDED TO WEAR SAFETY GLASSES AND GLOVES. EITHER WRAP THE THERMOMETER IN PARAFILM® OR WEAR RUBBER GLOVES BEFORE REMOVING THE THERMOMETER FROM THE VIAL.

#### CENTRIFUGE METHOD

The thermometer can be placed directly into a centrifuge or into a 15ml centrifuge tube prior to placement into the centrifuge. Pack the thermometer, or centrifuge tube containing the thermometer, with bubble wrap or padding to avoid breakage. Spin at 1500 RPM for 7.5 minutes.

#### HEATING METHOD

Heat the thermometer bulb in an upright position away from your face in warm liquid, air or over a soft flame. Allow the liquid column to rise slowly until the separated position of the column enters the expansion chamber at the top of the thermometer. **NOTE: FILLING THE EXPANSION CHAMBER MORE THAN HALFWAY WILL BREAK THE THERMOMETER.** Tap the thermometer GENTLY (if struck too hard, the fluid reservoir can break) while allowing the gas separating the column to rise to the top of the chamber. Allow the thermometer to cool slowly in an upright position.

#### COOLING METHOD

Prepare a solution of shaved ice and salt or CO<sub>2</sub> (dry ice) and alcohol. Place only the thermometer bulb in the solution. Keep the thermometer upright, bulb down. Allow the liquid column to retreat into the bulb, swing the thermometer (bulb down) in an arc forcing the entrapped gas above the column. Allow the thermometer to warm slowly in an upright position.

After using one of the above methods, examine the thermometer for fluid separation. **Repeat the procedure if separation is still evident.** When the fluid is united, carefully reinsert the thermometer into the glycol-filled vial and replace the unit in the protective sleeve. It is good laboratory practice to check the thermometer against a thermometer of known accuracy after the procedure to unite the fluid is complete.

If the fluid cannot be reunited, contact Streck Technical Services at 800-843-0912. Be prepared to provide the type and lot number listed at the top of this certificate.

#### LOW TEMPERATURE THERMOMETERS

According to the U.S. Department of Commerce monograph covering liquid-in-glass thermometry, the use of mercury-in-glass thermometers for low temperature measurements is limited by the freezing point of mercury. Organic liquids, such as red spirit, may have errors in temperature measurement if sufficient precautions are not taken. Organic liquids may wet the glass surface and leave a film on the wall of the capillary when the liquid column recedes. The thickness of the film on the capillary wall will depend, among other things, on the viscosity of the liquid, the interfacial action between the liquid and glass, and the rate at which the thermometer is cooled. Whenever possible, the rate of cooling should be slow with the bulb cooled first, enabling the viscosity of the organic fluid in the capillary to be kept as low as possible until the final temperature is reached. This minimizes the amount of liquid left on the capillary wall. Sufficient time should always be allowed to assure complete drainage. This may take an hour or more under adverse conditions.

#### WATER BATHS AND HEAT BLOCKS

Temp-Chex glass thermometers may be used in a water bath or heat block by removing the thermometer from its glass vial, being careful not to spill the propylene glycol in the vial. The thermometer can then be placed in a test tube filled with liquid and put in a rack in the water bath or heat block.

#### ORDERING INFORMATION

Please call our Customer Service Department at 800-228-6090 for assistance. Additional information can be found online at [www.streck.com](http://www.streck.com).