

Certificate of Accuracy

Type:	Temp-Chex Red Spirit, Refrigerator	Range:	-5° to 15°C
Serial Number Series:	X00000-X00000	Streck Catalog #:	240043
Lot #:	00000000	Date of Certification:	00/00/0000

This is to certify that 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 one scale division.

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

MSDS can be obtained on the homepage of www.streck.com, or by calling the following phone number, 1-800-843-0912, or by calling your local supplier.

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 this plastic 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.

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 tube. The tube will contain the fluid should breakage occur. This assembly can be attached magnetically or adhesively to surfaces.

CALIBRATION STATEMENT

In our opinion once calibrated and used with proper care, your 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. Accuracy can be affected by shock, aging, temperature and contamination. It is the customer's responsibility to maintain traceability through periodic recalibrations or verifications. Contact Streck Sales at 1-800-843-0912.

INSTRUCTIONS FOR USE

1. Visually inspect the thermometer immediately after unpacking. DO NOT REMOVE FROM THE PLASTIC TUBE. This plastic container is a safety feature of the product. Provided no fluid separation is evident, the Temp-Chex can be placed directly into service. Fluid separation has to do with the fluid inside the thermometer itself, not the fluid inside the vial. The fluid should be in a continuous unbroken column. Gaps or breaks in this fluid indicate separation and must be corrected before the Temp-Chex will read the proper temperature. These gaps or breaks are not a product defect. Jarring the unit either in shipment or with normal use can cause separation. If the fluid has separated, it can easily be united. See Directions for Uniting Fluid Separation.
2. Temp-Chex must be stored in the upright position. 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 before placing into service.

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.

CENTRIFUGE METHOD

If available the entire Temp-Chex can be placed in a centrifuge. Spin at 1500 RPMs for 7.5 minutes. This should correct the fluid separation. If the entire Temp-Chex can not be inserted into the centrifuge, one of the alternative methods may be used.

Before attempting the following methods, the thermometer must first be removed from its protective sleeve and glycol-filled vial. THE THERMOMETER IS MADE OF GLASS AND CAN EASILY BE BROKEN. BEFORE REMOVING THE THERMOMETER FROM THE VIAL, IT IS RECOMMENDED THAT THE TECHNICIAN WRAP THE THERMOMETER IN PARAFILM® OR WEAR RUBBER GLOVES. Hold the vial in an upright position, using a gentle twisting motion, remove the thermometer from the vial.

TEST TUBE SPINNER METHOD

Place the thermometer in a 15ml centrifuge tube and spin at 1500 RPMs for 7.5 minutes. Carefully reinsert the thermometer into the Temp-Chex vial and replace the vial in the protective sleeve.

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 that over-filling the expansion chamber will break the thermometer. Tap the thermometer GENTLY (if struck too hard, the fluid reservoir can break) in an upright position allowing the gas separating the column to rise above the column. Allow the thermometer to cool slowly in an upright position. Carefully reinsert the thermometer into the Temp-Chex vial and replace the vial in the protective sleeve.

COOLING METHOD

Prepare a solution of shaved ice and salt or CO₂ (dry ice) and alcohol. Place the thermometer bulb only in the solution. Keep the thermometer upright. 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. Carefully reinsert the thermometer into the Temp-Chex vial and replace the vial in the protective sleeve. After using one of the above methods, examine the thermometer for fluid separation. Repeat the procedure if separation is still evident. CAP recommends that the thermometer be checked against a thermometer of known accuracy.

In the event the fluid cannot be reunited, contact Streck at 800-843-0912.

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. Under adverse conditions this may take an hour or more.

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 toll free 800-228-6090 for assistance. Additional information can be found online at www.streck.com.

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