SickleScreen Sickle Hemoglobin Screening Kit or SickleScreen Control Set

I. Intended Use
Pacific Hemostasis SickleScreen Sickle Hemoglobin Screening Kit and SickleScreen Control Set are intended for use in screening for sickle cell disease and sickle cell trait. SickleScreen Controls can be used with procedures based on differential solubility of reduced hemoglobin, or with enzyme immunoassays specific for hemoglobin S.

II. Summary and Principles
Sickle cell disease is a chronic hemolytic anemia seen in individuals heterozygous for the hemoglobin S gene (SS), in those individuals, Hemoglobin S account for 70-80% of the total hemoglobin. When Hemoglobin S is reduced to deoxyhemoglobin S (HbS), it forms filamentous tetramers that cause red blood cells of those individuals to “sickle”. Repeated cessation of circulation in sickle cell vessels can lead to accumulated damage in a variety of organs, including kidney, heart, lung, and eyes.

Heterozygous (AS) individuals are carriers of the sickle cell trait and have up to 50% Hemoglobin S. While they are usually asymptomatic, these patients should be identified for genetic counseling purposes. Under conditions of reduced oxygen pressure, such as anemia, vaso-oclusion in poorly perfused arteries, and severe pneumonia, sickle cell syndrome may develop.

The SickleScreen Kit is a modified Holdredge procedure based upon differential solubility. Red blood cells are lysed by a surfactant. The released hemoglobin is reduced by sodium hydrosulfite. Reduced Hemoglobin S is insoluble and forms a turbid suspension of non-centrinated phosphate solutions. Normal Hemoglobin A and most other hemoglobins remain in solution under these conditions. Both sickle cell disease and sickle cell trait can be detected with this procedure.

III. Reagents

A. Reaction Vials (32 determination kit):

1. A concentrated solution containing surfactant, with 0.02% Sodium azide
2. A concentrated solution containing surfactant, with 0.02% Sodium azide and 0.06% Sodium citrate
3. A concentrated solution containing surfactant, with 0.02% Sodium azide and 0.1% Sodium phosphate
4. A concentrated solution containing surfactant, with 0.02% Sodium azide and 0.02% Sodium citrate

B. Sodium Hydrosulfite Powder Vials: (120 determinations)

C. Deionized water

D. Test Tubes

E. Buffer Concentrate

F. Positive Control

G. Negative Control

H. Kit Control

IV. Precautions

A. This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). See Safety Data Sheets for additional information.

B. All use of this kit should be under the supervision of a physician.

C. This kit is not to be used for diagnostic purposes.

D. This kit is not for sale to customers outside the United States.


V. Instructions

A. Reaction Vials:

1. Place 3.0 mL of Buffer Concentrate in each test tube.

2. Plant one of the test tubes in the Tube Reading Rack.

3. Add 50 µL of whole blood to the test tube.

4. Incubate in Tube Reading rack at room temperature for 10-20 minutes.

5. Do not report patient results if the positive control appears negative.

VI. Results

A. Reaction Vials: (32 determination kit):

1. Sodium hydrosulfite powder vials should be protected from light.

2. Reconstitute Sodium hydrosulfite powder vials with 0.5 mL Deionized water with sodium azide as a preservative. Store at 2-8°C.


5. May cause slight eye irritation

6. Interactions with Other Chemicals

7. No information available

8. See Safety Data Sheets for additional information.

B. Deionized water:


2. Use deionized water to reconstitute Sodium hydrosulfite powder vials. Store at 2-8°C.

3. Sodium hydrosulfite powder vials should be protected from light.

C. Deionized water:

1. Sodium hydrosulfite powder vials should be protected from light.


3. Sodium hydrosulfite powder vials should be protected from light.

IV. Precautions

A. Reaction Vials:


2. Sodium hydrosulfite powder vials should be protected from light.


4. Sodium hydrosulfite powder vials should be protected from light.

C. Deionized water:

1. Sodium hydrosulfite powder vials should be protected from light.


3. Sodium hydrosulfite powder vials should be protected from light.


