Study of most efficient interior colors for solar box cookers

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Which Interior Color for Solar Box Cookers gets Hottest?

- **TEST 1**
  - Black Sides/Black Bottom vs Foil Sides/Foil Bottom
  - BS/BB vs FS/FB

- **TEST 2**
  - Black Sides/Foil Bottom vs Foil Sides/Black Bottom
  - BS/FB vs FS/BB

- **TEST 3**
  - Black Sides/Black Bottom vs Foil Sides/Black Bottom
  - BB/BB vs FS/BB

- **TEST 4**
  - Foil Sides/Black Bottom vs White Sides/White Bottom
  - FS/BB vs WS/WB

Four (4) Tests follow Comparing Two (2) Solar Cookers at a Time.
Setting up for the testing of the box cookers
Setup for the interior of the box cookers

- Black Pan with one liter of water on a rack
- Thermocouple location in water
- Pan position in box
- Oven bag stretched in screen frame for glazing
TEST 2
Black Sides/Foil Bottom (BS/FB)
Vs
Foil Sides/Black Bottom (FS/BB)
Four (4) Hour Test
Winner FS/BB

Test Results from Black Sides/Foil Bottom vs Foil Sides/Black Bottom
**Test Results from Black Sides/Black Bottom vs Foil Sides/Black Bottom**

**TEST 3**

Black Sides/Black Bottom (BS/BB)  
Vs  
Foil Sides/Black Bottom (FS/BB)  
Four (4) Hour Test  
Winner FS/BB

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**BS/BB vs FS/BB**

- **Ambient**
- **BS/BB**
- **FS/BB**

Time (In 10 min Increments)

Ending time of test 17:54 (UTC), Date: 12/01/20, Altitude 65.6 ft, Longitude -117.235145 – Latitude 32.804809

**Irradiance Measurement**

Time (In 10 min Increments)

Palm Tree

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**CONSOLFOOD 2020**
Test Results from Foil Sides/Black Bottom vs White Sides/White Bottom

Test 4

Foil Sides /Black Bottom (FS/BB) Vs White Sides/White Bottom (FS/BB)
Four (4) Hour Test
Winner FS/BB
STUDY OF THE MOST EFFICIENT INTERIOR COLORS FOR SOLAR BOX COOKERS

The question many new solar cooks ask is

“What interior color combinations for a solar cooker gets the hottest?

To answer this question I conducted four (4) tests using five different interior colors.

<table>
<thead>
<tr>
<th>Test #</th>
<th>Test Combination</th>
<th>Winner Temperature Difference</th>
<th>Winner Interior Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>BS/BB vs FS/FB</td>
<td>The winner by 4 degrees C</td>
<td>BS/BB</td>
</tr>
<tr>
<td>#2</td>
<td>BS/FB vs FS/BB</td>
<td>The winner by 8 degrees C</td>
<td>FS/BB</td>
</tr>
<tr>
<td>#3</td>
<td>BS/BB vs FS/BB</td>
<td>The winner by 4 degrees C</td>
<td>FS/BB</td>
</tr>
<tr>
<td>#4</td>
<td>FS/BB vs WS/WB</td>
<td>The winner by 8 degrees C</td>
<td>FS/BB</td>
</tr>
</tbody>
</table>

The data shows that the box with Foil Sides and Black Bottom was superior by only 4 to 8 degrees C in each test. All interior colors combinations reached the minimum temperature requirement of 65.5 degrees C to pasteurize water.