

## Technical Manual

# Q-SUN

## Xenon Test Chamber



**Xe-3**



**Xe-1**

### For Serial Numbers:

XX-XXXX- 46 thru 57-X3H  
XX-XXXX- 46 thru 57-X3HS  
XX-XXXX- 46 thru 57-X3HC\*  
XX-XXXX- 46 thru 57-X3HSC\*  
XX-XXXX- 46 thru 57-X3HBS\*  
XX-XXXX- 46 thru 57-X3HDS\*  
XX-XXXX- 46 thru 57-X1B  
XX-XXXX- 46 thru 57-X1S  
XX-XXXX- 46 thru 57-X1BC\*  
XX-XXXX- 46 thru 57-X1SC\*

\*with supplemental manual

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### 9.3 Mounting Test Specimens (July 2009)

**Caution:** Do not cover or shadow the black panel. Covering the black panel with specimens or shadow lowers its temperature and can cause the heater to stay on too long, overheating the specimens. Mount three dimensional specimens far enough away from the black panel to avoid casting a shadow on it.

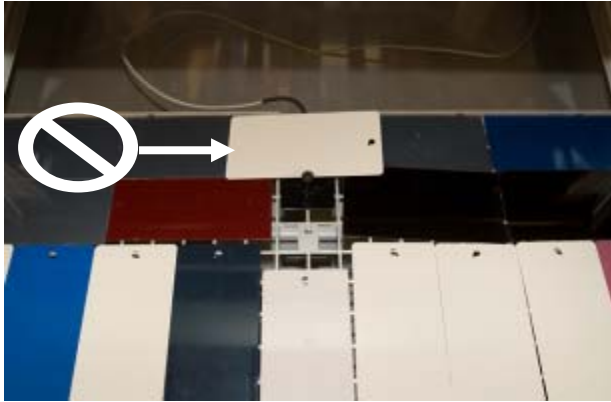


Figure 9.3a: Do not cover the black panel.

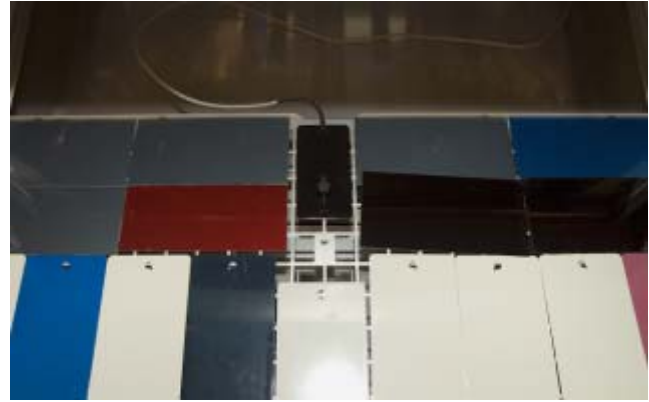


Figure 9.3b: Do not cover the black panel.

Flat specimens and three-dimensional items are placed directly on the tray. High air flow through the chamber makes it necessary to secure lightweight specimens.

Xe-3

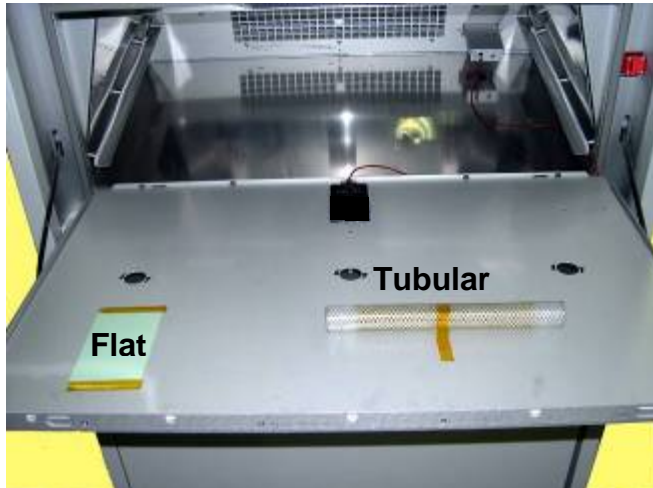


Figure 9.3c: Specimens secured to tray

Xe-1

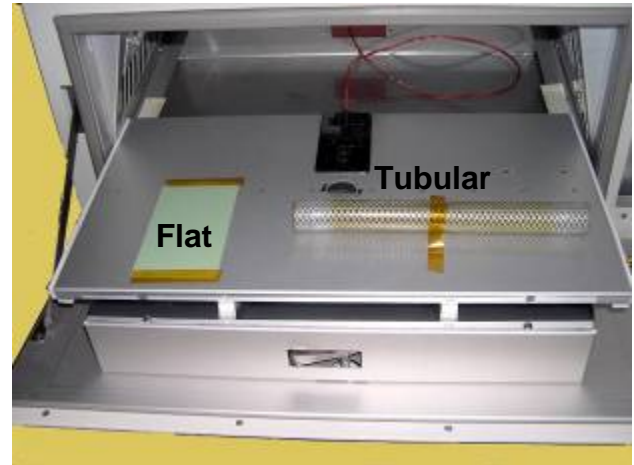


Figure 9.3d: Specimens secured to tray

### Solid and Open Back Specimen Trays

A solid back tray partially insulates the back side of the specimens and causes some specimens to run hotter than when mounted on the open back tray. The solid tray is chosen for most applications.



Figure 9.3e: Xe-3 solid back specimen tray



Figure 9.3f: Xe-3 open back specimen tray

When using the open back tray, all spaces not filled with test specimens must be filled in for proper air flow. Otherwise, the air will flow through the tray and will not flow uniformly over the test specimens. The open back tray is required for test SAE J2527 (performance based version of SAE J1960) or SAE J2412 (performance based version of SAE J1885).



Figure 9.3g: Gaps between specimens on the open back tray affect cooling air flow.

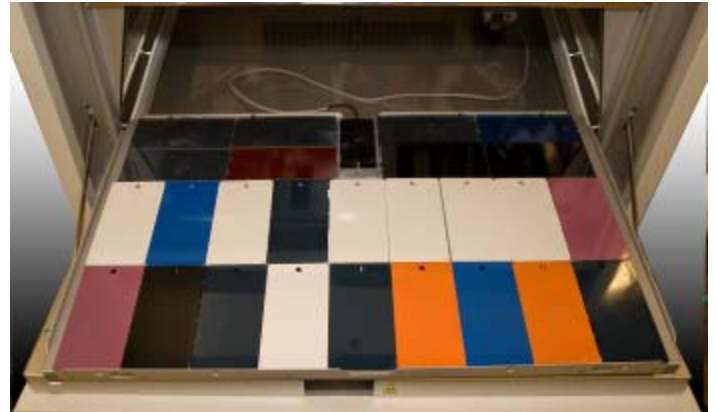


Figure 9.3h: Fill in gaps between specimens on the open back tray for proper cooling air flow.

### Panel Holders

Panel holders are available to hold flat 50x100mm, 75x150mm, 100x150mm, and 100x200mm specimens. The panel holders come with blank Q-Panel's and retaining rings.



Figure 9.3i 50x100mm panel holder with a 3mm thick plastic specimen

Xe-3



Figure 9.3j (26) 50x100mm panel holders.

Xe-1



Figure 9.3k: (8) 50x100mm panel holders.

## Large Panel Holders



Figure 9.3l: (10) 75x150mm panel holders on Xe-3 specimen tray



Figure 9.3m: (8) 100x150mm panel holders on Xe-3 specimen tray



Figure 9.3n: (6) 100x200mm panel holders on Xe-3 specimen tray

### Mounting Thin Films and Textile Specimens

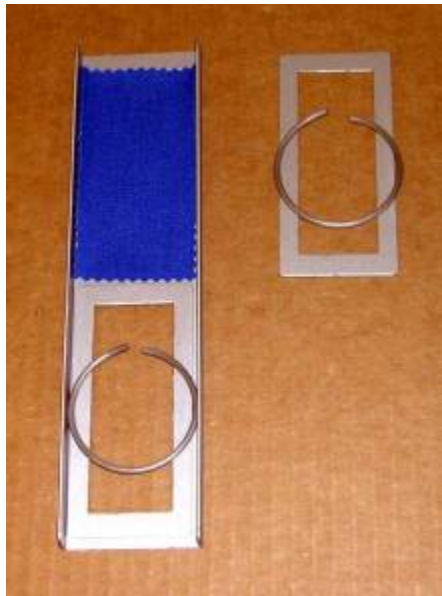


**Figure 9.3o** Thin film placed on panel holder

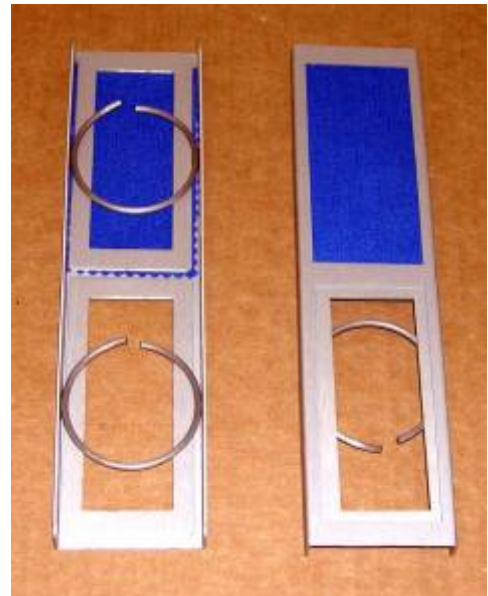


**Figure 9.3p:** Thin film mounted in panel holder

To mount thin films or textile specimens without a panel backing (so the specimen can “breathe”) a special panel holder is available. The textile/thin film holder (part number X-10255-X) is shown in figures 9.3q and 9.3r. Notice that the solid backing panel is replaced with a backing panel that is open in the center.



**Figure 9.3q:** Textile specimen placed on textile/thin film holder



**Figure 9.3r:** Textile specimen mounted in textile/thin film holder

### Textile Masks

The textile mask (part number X-10264-K) mounts in the 50x100mm panel holder. A specimen can be placed in the Q-Sun for 4 days but a portion of the specimen can be exposed to the light for only 1 day, another portion for 2 days, another portion for 3 days, and another portion for 4 days by removing a different section of the mask each day.

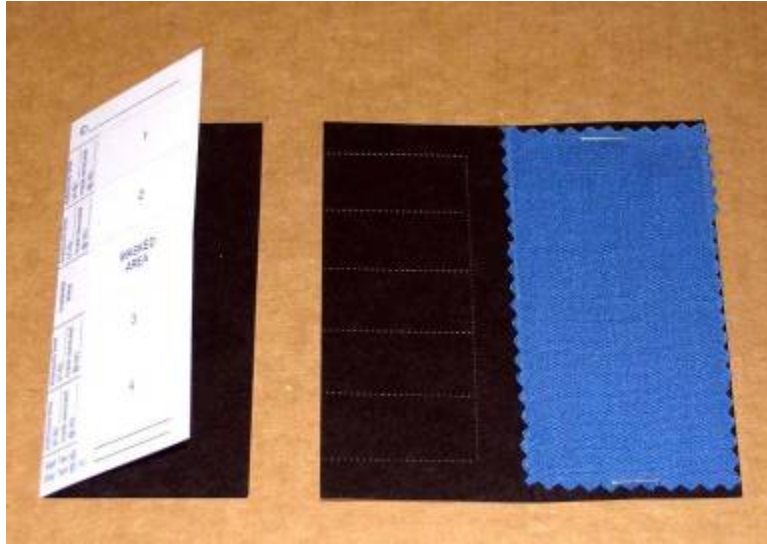


Figure 9.3s: Textile mask with specimen stapled inside



Figure 9.3t: Textile mask mounted in panel holder with one section of the mask removed.

A textile mask of the type described in ISO 105 B02 is also available. Specimens are initially covered with a 1/3 mask, replaced later in the test with a 2/3 mask.

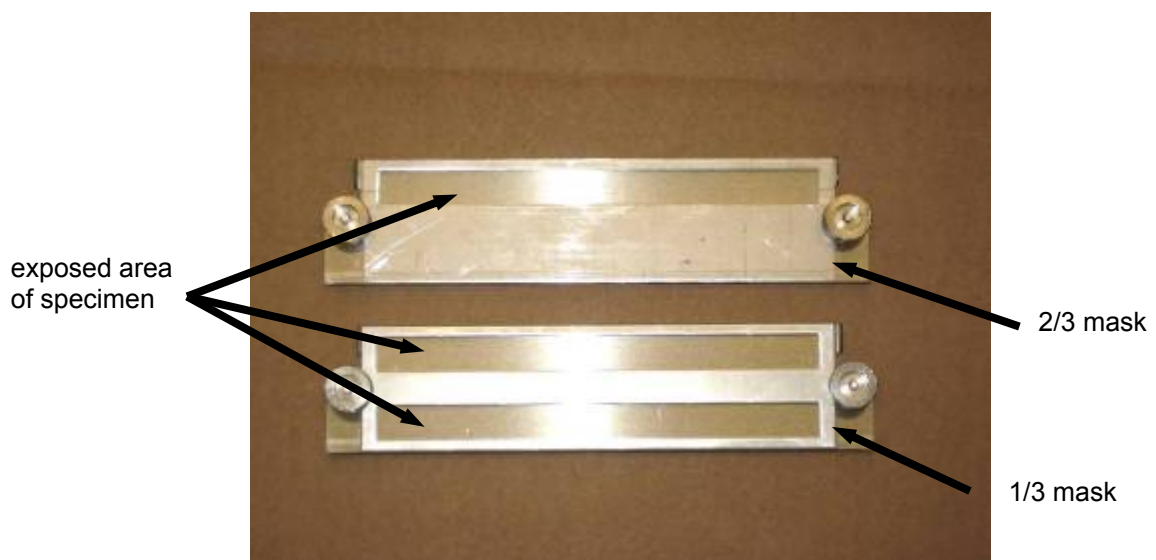


Figure 9.3u: ISO 105 B02 type textile mask

### Standard Reference Materials

Standard reference materials should be placed just in front of the black panel. These materials are available from Q-Lab. See section 15 for a listing.

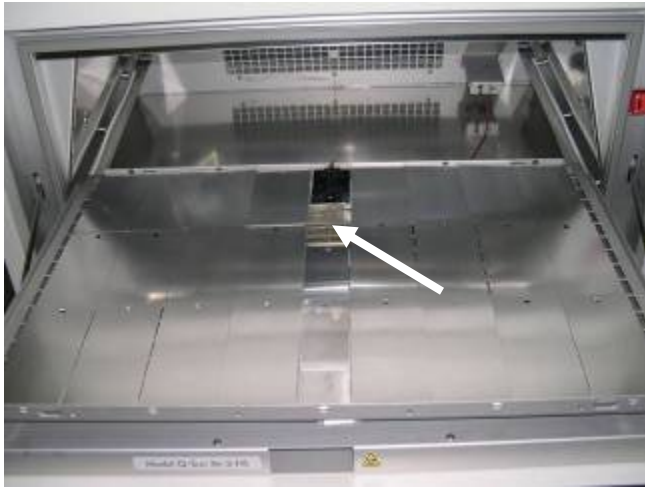


Figure 9.3v: Reference material position on Xe-3 specimen tray



Figure 9.3w: Reference material position on Xe-3 specimen tray (shown using panel holders)



### 3D Specimens

The following graph shows the relationship between distance from the specimen tray and irradiance.

**Note:** Specimens mounted above the plane receive higher irradiance.

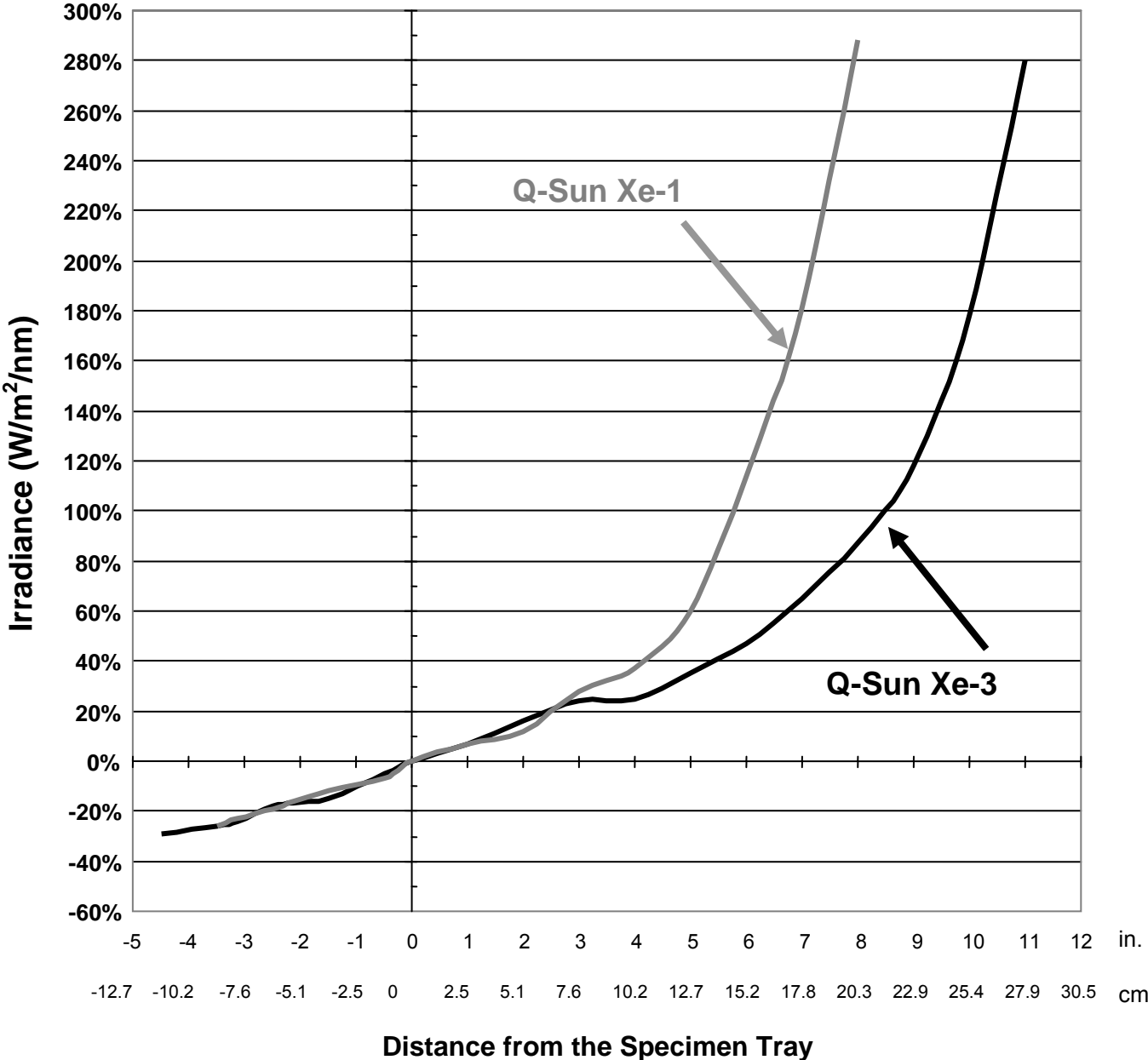


Figure 9.3x: Height vs. Irradiance for the Q-Sun Xe-3 and Q-Sun Xe-1

### 9.4 Repositioning Test Specimens (October 2008)

Regular repositioning of the test specimens is recommended to obtain uniform exposures. Specimens to be tested for 2000 hours (12 weeks) should be repositioned weekly. Specimens to be tested for 100 hours should be repositioned daily. A suggested repositioning plan is shown for the Xe-3 and the Xe-1.

#### Xe-3



**Figure 9.4a: Specimen rotation.**

Remove two panel holders from front left corner. Move front row to left. Move two panel holders from back right corner to front row right corner. Move back row to right. Place two panels removed in the opening on the left of the back row.

Xe-1



**Figure 9.4b: Specimen rotation**

Remove the two panel holders from the front left corner. Move the front row to left. Move two back right corner panels to front right corner. Move back row to right. Place panels removed in the opening in the left back corner.