Cryoguard Activation Tool Directions

This tool is designed to assist in the activation process of the Cryoguard Thermal Exposure Indicators. It is required for the activation of M-135 and M-150 indicators and is helpful when activating other indicators. Using the tool for activating indicators prevents thermal exposure caused by handling, and using it with indicators on a freezer cane conveniently allows for activation without removing the indicator from the cane – thereby limiting thermal exposure of the indicator during activation.

1. If using a freezer cane, place a Cryoguard Thermal Exposure Indicator in an end slot of the cane with enough space to fit the activation tool plates. The indicator can be placed upright or upside down in either end depending on the application as seen below in the figures.

   

   This tool allows for activation of indicators in any of the four possible positions. From left to right: indicator in the top slot with the pin down, indicator in the top slot with the pin up, indicator in the bottom slot with the pin down, and indicator in the bottom slot with the pin up.

   Note: It is recommended to check the fit of the freezer cane and indicator in the tool before the activation process. The two middle positions are recommended. See step 4 for more information.

2. Freeze the indicator for the appropriate length of time and at an appropriate temperature based on the indicator model. See Table 1 below to determine the correct freezing conditions. Indicators to be activated on a freezer cane should be frozen on the cane.

3. When completely frozen, remove the indicator – on or off the freezer cane – with the activation tool in hand, ready for use. The tool should be held so that the base is in the palm of the hand with the thumb holding it in place and fingers resting on the lever as shown below without an indicator already inserted into the tool. Use tweezers to handle indicators not on a freezer cane.

   

4. If using a freezer cane: affix the cane on the activation tool so that the indicator is in the tool between the two plates and the unused length of the freezer cane is pointed away from the hinge of the tool. The freezer cane should be able to fit between the sides of the tool without causing the pin to misalign with the depressions on the plates. Both plates of the tool have pin depressions, allowing for activation in any of the positions on the freezer cane as shown below.

   

   The left two pictures show a demonstration of the indicator in the bottom of the cane, while the right two pictures show the indicator in the top of the cane. Refer to step 1.

   If not using a freezer cane: use tweezers to place the indicator in the tool and refer to step 5.

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We recommend placing the indicator so that the pin in facing in the direction of the tool hinge.

5. Adjust the indicator using the freezer cane or tweezers so that the pin is directly in the depression of the plate. Position the indicator between the plates with the pin in either direction. If the indicator is placed with the pin towards the inner wall of the tool, be sure the eyelets on the sides of the indicator are behind the back wall. With a freezer cane do not remove cane from the indicator. The images show correct indicator placement.

6. Wait for the indicator to slightly thaw at room temperature for easier, less damaging activation. See Table 1 below to determine the length of time needed, if any, to thaw the indicator before activation. Adding more than 5-10 seconds onto the thawing time could result in red/colorless regions of the indicator.

7. Apply gentle, steady pressure to the lever of the activation tool until the pin begins to depress. Once the pin moves, apply more pressure until the pin is completely pushed into the indicator. The images below show the plates flush with the activated indicator (no gaps seen between the plates and indicator) when the lever is completely pressed. If using a cane, do not remove it.

Note: Applying high pressure quickly will result in damage to the pin and/or indicator making it unusable

8. Immediately refreeze the indicator for an appropriate amount of time based on the indicator model. See Table 1 below to determine the amount of re-freezing time needed after activation. This is especially important for M-135 and M-150 indicators to do quickly to prevent premature color change. Indicators activated on a freezer cane should remain on the freezer cane.

9. After refreezing, the indicator is ready for use. Place the indicator in the desired environment.

Table 1: Freezing and Thawing Times Pre- and Post- Indicator Activation

Indicator Model	Freezing Temp. (°C)	Minimum Freezing Time (min)	Thawing Time (s)	Re-Freezing Temp. (°C)	Minimum Re-Freezing Time (min)
M-40	-78 (dry ice)	60	5-15	-78 (dry ice)	60
M-40	-65	60	0-10	-65	60
M-40	-196 (LN2)	5	50-60	-196 (LN2)	5
M-70	-95	60	0-10	-95	60
M-70	-196 (LN2)	5	40-50	-196 (LN2)	5
M-100	-125	60	0-10	-125	60
M-100	-196 (LN2)	5	30-40	-196 (LN2)	5
M-120	-196 (LN2)	5	30-40	-196 (LN2)	5
M-135	-196 (LN2)	10	10-20	-196 (LN2)	10
M-150	-196 (LN2)	10	5-15	-196 (LN2)	10

**Handle frozen indicators with insulated gloves to prevent premature color change. Always wear safety glasses.