
Aluminum Oxide Probe Maintenance

Other than periodic calibration checks, little or no routine moisture probe maintenance is required. However, as discussed in the previous section, any electrically conductive contaminant trapped on the aluminum oxide sensor will cause inaccurate moisture measurements. If such a situation develops, return of the moisture probe to the factory for analysis and recalibration is recommended. However, in an emergency, cleaning of the moisture probe in accordance with the following procedure may be attempted by a qualified technician or chemist.

IMPORTANT: *Moisture probes must be handled carefully and cannot be cleaned in any fluid which will attack its components. The probe's materials of construction are Al, Al₂O₃, nichrome, gold, stainless steel, glass and Viton[®] A. Also, the sensor's aluminum sheet is very fragile and can be easily bent or distorted. Do not permit anything to touch it!*

The following items will be needed to properly complete the moisture probe cleaning procedure:

- approximately 300 ml of reagent grade hexane or toluene
- approximately 300 ml of distilled (not deionized) water
- two glass containers to hold above liquids (metal containers should not be used).

To clean the moisture probe, complete the following steps:

1. Record the dew point of the ambient air.
2. Making sure not to touch the sensor, carefully remove the protective shield from the sensor.
3. Soak the sensor in the distilled water for ten (10) minutes. Be sure to avoid contact with the bottom and the walls of the container!

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4. Remove the sensor from the distilled water and soak it in the clean container of hexane or toluene for ten (10) minutes. Again, avoid all contact with the bottom and the walls of the container!
5. Remove the sensor from the hexane or toluene, and place it face up in a low temperature oven set at $50^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ($122^{\circ}\text{F} \pm 4^{\circ}\text{F}$) for 24 hours. DO NOT EXCEED 50 C OR PROBE WILL BE PERMANENTLY DAMAGED.
6. Repeat steps 3-5 for the protective shield. During this process, swirl the shield in the solvents to ensure the removal of any contaminants that may have become embedded in the porous walls of the shield.
7. Carefully replace probe's protective shield, making sure not to touch the sensor.
8. Connect the probe cable to the probe, and record the dew point of the ambient air, as in step 1. Compare the two recorded dew point readings to determine if the reading after cleaning is a more accurate value for the dew point of the ambient atmosphere.
9. If the sensor is in proper calibration ($\pm 2^{\circ}\text{C}$ accuracy), reinstall the probe in the sample cell and proceed with normal operation of the hygrometer.
10. If the sensor is not in proper calibration, repeat steps 1-9, using time intervals 5 times those used in the previous cleaning cycle. Repeat this procedure until the sensor is in proper calibration.

A trained laboratory technician should determine if all electrically conductive compounds have been removed from the aluminum oxide sensor and that the probe is properly calibrated. Probes which are not in proper calibration must be recalibrated. It is recommended that all moisture probes be recalibrated by GE Panametrics approximately once a year, regardless of the probe's condition.