

When process problems occur, crystals are often the first and only ingredient in the coating process that gets the blame. Rate spikes or crystal failures do not always indicate crystal problems, they may actually reveal other hidden process issues. By focusing on the crystal, you may be overlooking other more significant process problems.

Fil-Tech recommends the following:

1) Do not touch crystals with fingers or hands. Use tweezers to handle crystals. Store unused crystals in a clean area.

2) Use Stress Relieving Alloy® or Longer Life Gold crystals instead of Gold when depositing SiO₂, Magnesium Fluoride, and similar dielectric materials. Stress Relieving Alloy and Longer Life Gold electrodes yield, dissipating film stresses before they reach the crystal surface.

3) Move the sensor head away from deposition splatter. Shield the crystal from direct exposure to radiant heat sources.

4) Frequently inspect the finger spring contacts in the sensor head and adjust or replace when necessary. Keep the sensor head cap clean. Keep cables in good condition and snug to the sensor and feedthrough.

5) Maintain the crystal sensor water temperature at a constant between 25° C and 50° C.

Help solve your process problems with crystal analysis. Send us your "problem" crystal and we will help find your process problems with Scanning Electron Microscope (SEM) analysis. SEM analysis will examine the crystal and identify evaporant splatter, fingerprints, and other causes of crystal failures. We will analyze your crystal and send you a SEM Report with our findings.

Note: Visual inspection of quartz crystals will not determine whether they will perform in your chamber. Quartz crystals have natural shadings from their base quartz layer. When coated, crystal will reproduce and reflect the quartz's natural shadings. The color and look of a crystal are not a specification for manufacture. The only tests to determine a crystal's performance are frequency and resistance at resonance. We manufacture in a class 100 clean room and package at cleanstations. We 100% inspect each crystal prior to shipment.

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Quartz Crystals Reveal Hidden Process Problems

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