

# Research Crystals



## MAXIMUM STABILITY IN DEMANDING APPLICATIONS

The standard AT-cut, 1 in. (25.4 mm) diameter crystal, pioneered by INFICON, is used primarily in research applications with the INFICON RQCM (Research Quartz Crystal Microbalance). These research crystals are designed for use with INFICON's rugged, easy to use crystal holders and are used for in-situ monitoring of deposited films or liquids.

**Geometry:** AT-cut quartz has superior mechanical and piezoelectric properties. The 1 in. (25.4 mm) diameter allows optimal distance between the active area of the crystal and the mounting o-ring. This improves the overall stability of the crystal by reducing the frequency changes due to mounting stress.

**Finish:** INFICON 1 in. (25.4 mm) research crystals are available with either an unpolished or polished finish. Polished crystals allow for a good correlation between theory and measurement during liquid immersion experiments.

### APPLICATIONS

- Metal plating
- Gas-phase mass detection
- Electro-chemistry
- Micro-rheology
- Protein adsorption/desorption
- Biofilm formation

### FEATURES AT A GLANCE

- Accurate
- Reliable
- Stable
- Wide variety of electrode materials available

**Electrode Material:** INFICON 1 in. (25.4 mm) research crystals are available in a variety of electrode materials including Gold, Platinum, and Titanium. Crystals with custom electrode materials are available on request. INFICON also offers Gold electrode crystals with an additional SiO<sub>2</sub> outer layer to create a hydrophilic surface needed for some biological applications.

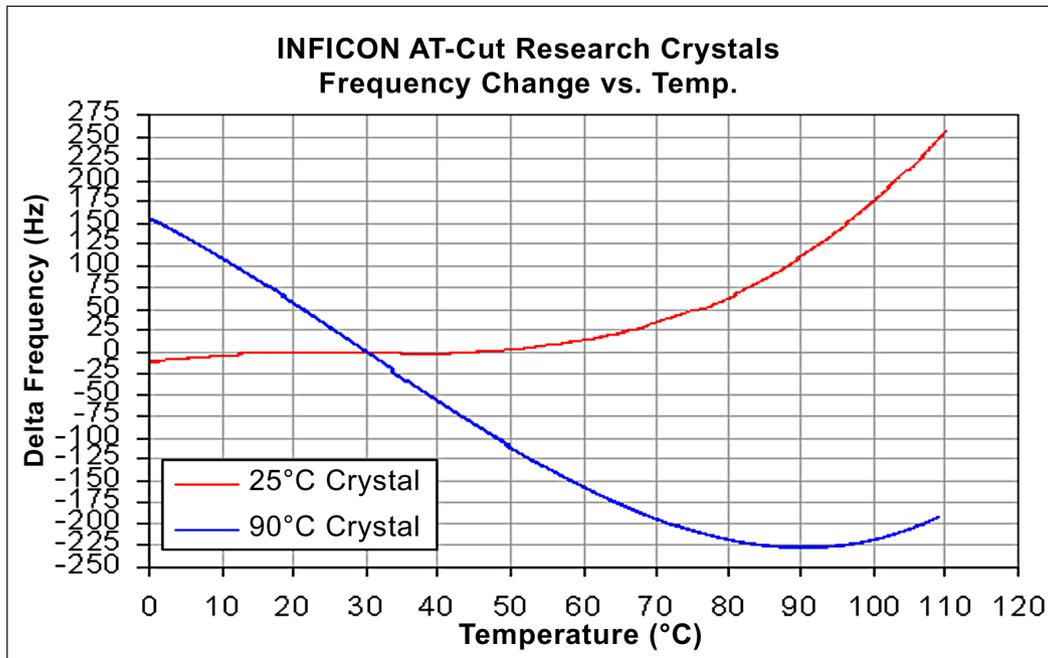
**Temperature:** Even though AT-cut crystals are designed to minimize the change in frequency due to temperature, the effect of temperature can be significant when attempting to resolve small mass (frequency) changes over long periods of time. INFICON offers AT-cut crystals optimized for two operating temperatures, 90°C and 25°C. These crystals have very good frequency stability when operating close to their specified temperature (see Figure 1).

Contact INFICON today to request a quote for custom crystals to accommodate your special requirements.

## SPECIFICATIONS

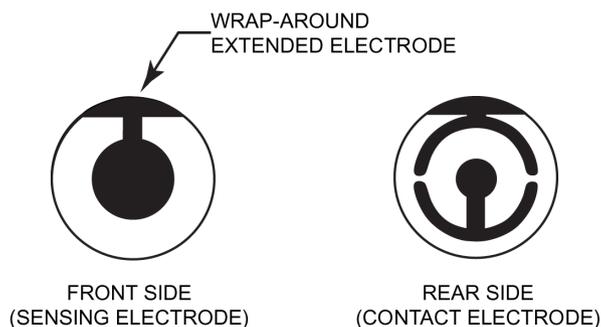
Frequencies:	5 MHz and 9 MHz
Frequency Range:	4.976 – 5.020 MHz 8.976 – 9.036 MHz
Resistance:	5 MHz, ~10 Ohms 9 MHz, ~7 Ohms
Crystal Diameter:	1 in. (25.4 mm)
Crystal Contour:	Plano-Plano
Crystal Orientation:	AT-Cut, for frequency stability over temperature
Compatibility:	INFICON/Maxtek liquid probes and crystal holders
Front Electrode Diameter:	0.5 in. (12.7 mm)
Packaging:	Individually packaged/sold
Crystal Thickness:	5 MHz, 0.013 in. (333 $\mu\text{m}$ ) 9 MHz, 0.007 in. (185 $\mu\text{m}$ )
Surface Roughness:	50 $\text{\AA}$ (polished)

Figure 1



## ORDERING INFORMATION

### INFICON 1 in. (25.4 mm) Diameter Crystals – Electrode Configuration



1 in. (25.4 mm) Crystals, AT-Cut, 90°C				
Part No./Finish		Frequency	Electrode Material (Front)	
Polished	Unpolished		Adhesion Layer	Sensing Electrode
149211-1	149211-2	5 MHz	Chromium	Gold
149238-1	149238-2	5 MHz	Titanium	Gold
149240-1	149240-2	5 MHz	Titanium	Platinum
149241-1	149241-2	5 MHz	Chromium	Platinum
149242-1	–	5 MHz	Titanium	Silver
149243-1	–	5 MHz	Titanium	Aluminum
149248-1	–	5 MHz	Titanium (No adhesion layer)	
149250-1	–	5 MHz	Chromium	Nickel
149252-1	–	5 MHz	Chromium	Iron
149255-1	–	9 MHz	Chromium	Gold
149270-1	–	5 MHz	Titanium	SiO <sub>2</sub>
149280-1	–	5 MHz	Chromium (No adhesion layer)	
750-1030-G1	–	5 MHz	Aluminum (No adhesion layer)	
750-1031-G1	–	5 MHz	Uncoated (Chromium/Gold contact electrode and wrap-around)	
750-1035-G1	–	5 MHz	Uncoated (Titanium/Gold contact electrode and wrap-around)	
SPC-1193-P1	–	5 MHz	Titanium/Gold	Iron

1 in. (25.4 mm) Crystals, AT-Cut, 25°C				
Part No./Finish		Frequency	Electrode Material (Front)	
Polished	Unpolished		Adhesion Layer	Sensing Electrode
149257-1	–	5 MHz	Titanium	Gold
149272-1	–	9 MHz	Chromium	Gold
149273-1	–	5 MHz	Chromium	Gold
149274-1	–	5 MHz	Titanium	Platinum
149275-1	–	5 MHz	Titanium	Silver
149276-1	–	5 MHz	Titanium	Aluminum
149277-1	149277-2	5 MHz	Titanium/Gold/Titanium	SiO <sub>2</sub>
750-1029-G1	750-1033-G1	5 MHz	Titanium (No adhesion layer)	
750-1037-G1	–	9 MHz	Titanium	Platinum
750-1039-G1	–	9 MHz	Titanium/Gold/Titanium	SiO <sub>2</sub>
149296-1	–	9 MHz	Titanium	Gold



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