



## Product Information

### QSense® QSX 338 Gold, for electrochemistry

The QSense sensors are developed and produced to provide you with stable, reliable and reproducible data. Full performance is ensured through extensive quality controls and guaranteed for one-time use according to the recommendations.

#### Sensor specifications

Description	Gold sensor for QEM 401
Top coating material	Gold (Au) <sup>A</sup>
Adhesion layer	Ti, suitable for electrochemistry applications.
Surface roughness	< 1 nm RMS <sup>B</sup>
Maximum temperature <sup>C</sup>	250 °C
Pre-cleaning of sensor	A new sensor might be contaminated with hydrocarbons and dust. Pre-cleaning the surface will give more reproducible QCM-D results.
Protocol light	For light pre-cleaning, step 1, 4 and 5 below can be used.
Protocol thorough <sup>D, E, F</sup>	The procedure should be carried out under a fume hood, with proper protection (eye wear and gloves). <ol style="list-style-type: none"> <li>1. UV/ozone treat for 10 minutes</li> <li>2. Heat a 5:1:1 mixture of milliQ water, ammonia (25 %) and hydrogen peroxide (30 %) to 75 °C, approx. 10 ml is sufficient</li> <li>3. Place the sensor in the heated solution for 5 minutes</li> <li>4. Rinse with milliQ water. It is important that the surfaces are kept wet after ammonium peroxide immersion until they are rinsed well with water</li> <li>5. Dry with nitrogen gas</li> <li>6. UV/ozone treat for 10 minutes</li> </ol>
Usage	QSense sensors are intended for one-time use only.
Storage	Store in a cool, dry place out of light.
Shelf Life	Stable at least 18 months from package date in unopened package, see expiry date on package.
Chemical compatibility	There is no guarantee that the coating will be stable under all experimental conditions.

Specifications may be subject to change without notice.

A - The chemical composition was confirmed by XPS.

B - Ref. AFM.

C - Sensor oscillates/works at 250 °C in air. Temperatures above 250 °C have not been tested. Note that ambient environment may influence coating behavior. Theoretically, the quartz and the Au coating withstand temperatures up to 573 °C where the quartz undergoes a phase transition altering its piezoelectric properties. However, the adhesion layer is known to migrate in Au, and the migration rate is affected both by temperature and time.

D - The suggested pre-cleaning protocols for the sensors are not harmful to the sensor coatings themselves. If the protocols are used for cleaning the sensor after a measurement, note that there is no guarantee that materials adsorbed onto the coatings are removed.

E - W. Kern et al, RCA Review 31 (1970) p187.

F - Please see QSense "Instrument care and sensor pre-cleaning" for more info.

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