INFICON

TECHNICAL NOTE

Transpector® CPM Calibration Reference

GAS COMPOSITION

A single source of a gas mixture can be used to accomplish two calibration functions:

- It can provide peaks at known masses for mass scale calibration.
- It can provide peaks whose amplitudes can be referenced to the known partial pressures in the mixture.

Selection of the appropriate mixtures of components is dictated by the mass range desired.

The method of delivery of this test mixture is a flow reference with a remote valve (V5) to turn on and off flow. The gas flow rate is calibrated at manufacturing time and is kept small (typically $1x10^{-4}$ Torr-L/s) by a sintered leak. Flow through the leak element is viscous flow so that sampling does not alter the gas composition in the reservoir.

The CPM pumping system does not allow other valves to be opened with the calibration reference flowing so that no calibration mix can enter the tool. The composition of the test mix is given in Table 1. Figure 1 shows the calibration spectrum when V5 is opened and the graph is auto-scaled. Since the gas is primarily Argon, the other calibration gases are difficult to see. Figure 2 shows these peaks after rescaling the graph.

Table 1: Calibration Mixture of Selected Impurities in Argon

Component Composition	Calibration Masses
H2 (1%)	2
He (1%)	4
N2 (1%)	28
Ar (Balance)	36, 38, 40
Kr (1%)	84
Xe (1%)	134, 136

PERFLUOROPHENANTHRENE LIQUID

The perfluoropheneanthrene liquid in the FC5311 is a high molecular weight liquid with a vapor pressure of 100 Pa (0.75 Torr) at 22 °C. The masses and characteristic peak intensities are shown in Table 2. This reference is used particularly for 200 AMU and 300 AMU sensors.

CAUTION

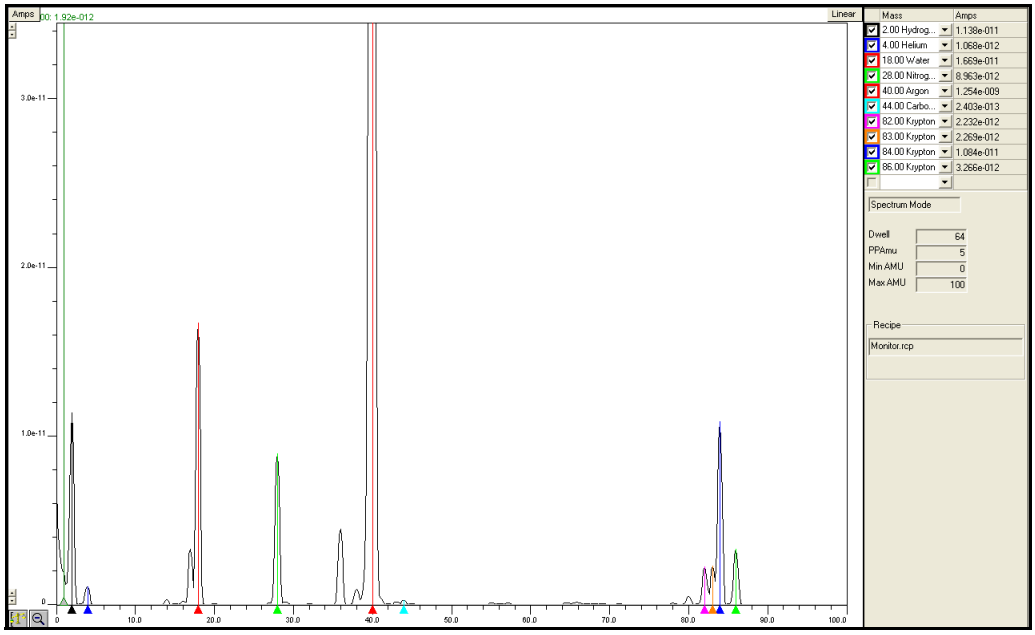
Due to the nature of the FC5311 reference gas, it may take up to 24 hours of pumping to remove all trace levels of the FC5311 compound after use. It is recommended that a bakeout be performed if the FC5311 reference gas is sampled.

Table 2: FC5311 Reference Mass Spectrum
70eV Peak intensity from 1 to 100

Mass	Intensity	Mass	Intensity	Mass	Intensity
55	1.83	155	3.05	293	7.65
56	1.09	162	5.64	305	1.14
57	2.97	169	7.66	317	2.27
69	100	181	11.23	331	1.12
70	1.17	193	6.73	343	1.17
93	5.97	205	2.82	367	1.88
94	1.27	217	2.05	405	4.23
100	11.09	219	2.66	455	18.3
112	1.5	231	4.06	505	4.41
119	16.8	243	7.66	517	1.17
124	1.49	255	2.09	555	4.62
131	47.08	267	2.55	605	1.64
143	5.26	286	2.09	624	1

Figure 1: Calibration Spectrum Using the Monitor Recipe - Auto-Scaled

Figure 2: Calibration Spectrum Using the Monitor Recipe
Zoomed to Show Less Intense Peaks



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