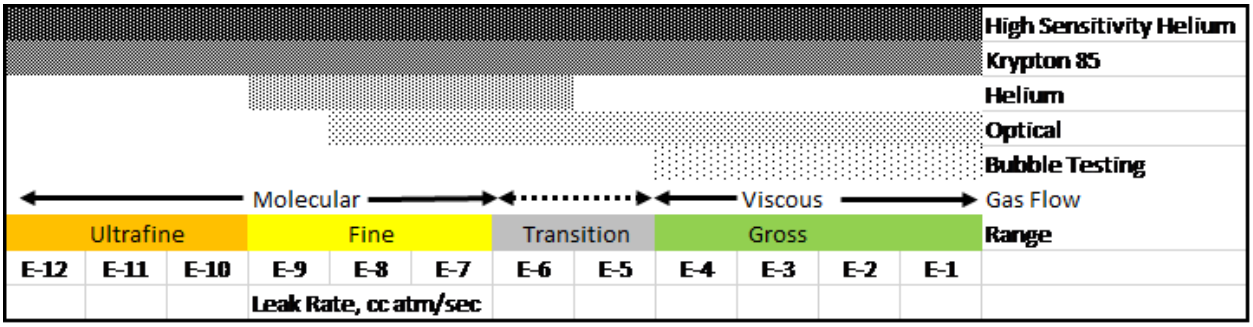

The chart presents the full range of sealed package leak rates (cm^3 atm sec-1) and capabilities of various test methods to measure those ranges. Leak rates range from 1 x 10^{-1} to 1 x 10^{-12} atm-cm^3/sec He.

Viscous gas flow, nominally in the gross leak range, occurs when the mean free path of the gas is smaller than the cross-section dimension of the leak path.

Molecular flow, nominally in the fine leak range, occurs when the mean free path of the gas is larger than the longest cross-section dimension of the leak path.

There is a transitional range from viscous to molecular flow of gases that occurs imprecisely in the range of E-5 ≒ E-6 cm^3 atm sec-1. In practice, leak rates are generally referred to as “gross” or “fine,” without the arbitrary distinctions “transition” and “ultrafine.”

The real physical behavior of gases moving through leak paths is complex and can be highly variable depending on gas species, leak size, tortuousness, physics, and chemistry of leak path surfaces, temperature, internal and external differences in partial pressure, and other variables.

MCL utilizes a high-sensitivity helium leak detection system per MIL-STD 883 Test Method 1014 Test Conditions A1, A2. This technique extends the dynamic range of helium leak testing to cover the full range of gross and fine leak detection using a highly sensitive quadruple mass spectrometer as the helium tracer gas detector.

There are no environmentally hazardous materials utilized in this detection method.

For further information please contact:

info@microcircuitlabs.com
610-228-0161