



testing services:

Leak Testing

Leak Testing is the branch of non-destructive testing that is concerned with the escape of liquids, vacuum or gases from sealed components or systems.

Method Selection

There are a great number of leak testing methods. Each method has its own advantages and disadvantages. Each has its own optimum sensitivity range. However, not all methods are useful for every application. By applying a number of selection criteria, the choice can often be narrowed to two or three methods with the final choice being determined by special circumstances or cost effectiveness

Leak Testing Objectives

Like other forms of non destructive testing, leak testing has a great impact on the safety or performance of a product. Reliable leak testing saves costs by reducing the number of reworked products, warranty repairs and liability claims. The time and money invested in leak testing offer produces immediate profit

Leakage & Tightness

Leakage & tightness are relative terms. Too often specifications are given in unrealistic terms such as leak tight or no leakage. However, nothing made by man can ever be completely free of leakage and, in most cases, it is uneconomic to even try. A balance must be struck between the increasing cost of finding smaller leaks and their importance to the functioning of the unit over its useful life. Leakage tight therefore has no meaning except in relation to the substance which is to be contained, its normal operating conditions, and the objectives with respect to safety, contamination, and reliability. Once the useful life of a unit has been determined (i.e., about 5 years for a can of Coca-Cola and 50 years for a pacemaker), the allowable leakage which will not cause a unit to fail can be calculated.

Leak Testing Methods

Ultrasonic Leak	Mass Spectrometer	Colorimetric Developer	Bubble test
Acoustic	Halogen	Pressure Change	Electronic Gas Detector
Liquid Tracer	Infrared	High Voltage	Radioactive tracer



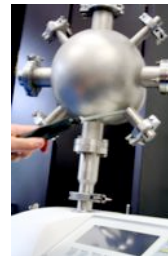
Testing Services at METROVAC:

•EN 13185 Non destructive testing – Leak testing – Tracer gas method*

- Vacuum technique total test procedure
- Vacuum technique partial test procedure
- Vacuum technique local test procedure
- Sniffing tests
- Pressure evacuation procedure

•EN 13184 Non destructive testing – Leak testing – Pressure Change method*

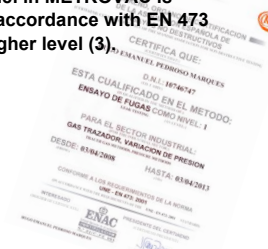
- Pressure Decay Technique
- Pressure Rise Technique.



EN 473 Non destructive testing – Qualification and certification of NDT personnel

The leak testing is performed by qualified and capable personnel.

In order to provide this qualification the personnel in METROVAC is certified in accordance with EN 473 up to the higher level (3).



Equivalent Leak Size

mbar.L.s ⁻¹	Time for 1 lb of Freon to leak	Time for 1 cc to leak	Bubble time in Water
10 ⁻¹	10 days	10 seconds	1,3 seconds
10 ⁻²	3 months	100 seconds	13,3 seconds
10 ⁻³	2,7 years	16,67 minutes	14,5 minutes
10 ⁻⁴	27 years	2,78 hours	24 minutes
10 ⁻⁵	270 years	27,8 hours	4 hours
10 ⁻⁶	2.700 years	11,57 days	
10 ⁻⁷	27.000 years	3,86 months	
10 ⁻⁸	270.000 years	3,22 years	
10 ⁻⁹	2700.000 years	32 years	