

Canister Specification:

1. Be of 6 litres capacity;
2. Be made of stainless steel;
3. Be 100% welded construction;
4. Meet USEPA Method TO14-A and Method TO15 requirements as a minimum and shall be capable of storing the more reactive chemical species frequently emitted to atmosphere (including aldehydes, ketones, alcohols, sulfur VOCs, *etc*) with minimal deterioration over 30 days of sample storage prior to laboratory analysis;
5. Have all internal surfaces lined with a continuous and conformal coating of fused silica. This coating shall cover all internal surfaces of the canister and associated fittings and pipe work which will be exposed to the to air sample;
6. Have an accurate vacuum-pressure gauge with a range from full vacuum designated as -30 inches of mercury (or -101 kPa gauge pressure, approximately 3 milliTorr absolute pressure), to zero at atmospheric pressure (i.e. gauge zero = 101.325 kPa absolute pressure), to maximum canister pressure - generally 40¹ pounds per square inch absolute pressure. A higher pressure scale maximum is acceptable provided the canister's maximum pressure is clearly marked on the scale in red. Equivalent metric scale annotation in kiloPascals (kPa) is preferred if available.
7. Have a Parker Hannifin (or equivalent) metal-to-metal stainless steel diaphragm type valve with 2/3 turn on-off control and with a conformal coating of fused silica on all surfaces exposed to the sampled air;
8. Have a valve guard ring which shall protect the valve and vacuum gauge and shall also form a handle to enable convenient manual handling of the canisters by field staff;

¹ NB Air Sampling Canisters are generally designed for a maximum pressures of around 40 pounds per square inch absolute (40 psia = 275.79 kPa absolute) and any canister pressurisation system must be strictly controlled to ensure this pressure is never exceeded as no safety release valve is incorporated into these canisters.

Any pressure above 41 psia is considered a compressed gas per U.S. Code of Federal Regulations 49 CFR, Subpart D, 173.115(b) and must be stored in appropriately designed cylinders. This same regulation also prohibits Air Sampling Canisters from being used with flammable, poisonous or liquefied gas.

Information courtesy of Aerosphere™ website
<http://www.geneq.com/catalog/en/aerosphere.html>; 29th May 2006.

9. Have a removable In-line filter holder with a replaceable 2-micron sintered stainless steel filter element and a right angle elbow (of 1/4 inch stainless steel pipe) with swagelok fittings to mount the in-line filter holder directly onto the canister so that the in-line filter holder sits horizontally and clears the valve guard ring. The in-line filter holder shall be Swagelok (part No. SS-4F-2) or equivalent and the sintered stainless steel filter element shall be Swagelok (part No. SS-4F-K4-2) or equivalent. The inlet of the filter holder shall be capped-off with a Swagelok brass plug (part No. -400-P) or equivalent. This filter holder and fittings shall maintain the gas tight integrity of the canister.
10. Be capable of maintaining a full vacuum for 10 days (minimum) whilst exposed to diurnal temperature and pressure variations typically experienced in Western Australia and the typical vibrations of vehicle or aircraft transport over that time; and
11. Be finished to have no sharp edges, burs or protrusions that could cause injury to staff handling the canisters or damage to property such as clothing, vehicles, aircraft, laboratory facilities, other canisters, *etc*, during handling, transport, sample analysis and storage;
12. Weigh no more than 4 kg each;
13. Be suitable for safe transport in commercial aircraft and non-pressurized light aircraft (including helicopters) in the fully evacuated condition and in the fully charged condition (i.e. when containing an air sample plus nitrogen supercharge).
14. Be supplied thoroughly cleaned and free of all manufacturing materials, swarf and all other contamination both inside and out.