LCQ DUO Gas Requirements

Gas requirements are as follows:

Helium for LCQDUO MS detector damping gas:

Ultra-high purity (99.999%) with less than 1.0 ppm each of water, oxygen, and total hydrocarbons. The required gas pressure is 275 ± 70 kPa (40 ±10 psi). Particulate filters can be a source of contamination, they are not recommended.

Helium can be dispensed from a tank containing 245 ft^3 of gas using Matheson regulator #3104C or equivalent tank and regulator.

Gas lines for helium should be copper or stainless steel. All gas lines should be free of oil and preferably flame dried. The gas lines should run to the left side of the LCQDUO system. Helium gas supply lines should terminate with 1/8-in., female, Swagelok®-type connectors.

> **Note.** Do not shut off the helium gas. A continuous flow of helium is required for the optimum performance of the MS detector.

> **Note**: If you intend to use helium for sparging your LC solvents, a second tank and regulator is required. The helium gas line should run to the left side of the LCQDUO system. Helium gas supply lines should terminate with a 1/8-in., female, Swagelok®-type connector.

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Nitrogen for API sheath gas and auxiliary gas:

The nitrogen should be high purity (99%). The required gas pressure is 690 ± 140 kPa (100 ± 20 psi).

The nitrogen gas line should run to the left side of the LCQDUO system. The nitrogen gas supply line should terminate with a 1/4-in., female, Swagelok-type connector. Particulate filters can be a source of contamination, they are not recommended.

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Typical nitrogen gas consumption (nitrogen on 24 hours per day) is 200 ft^3 per day. Therefore, it is recommended that nitrogen be supplied from one of the following sources:

- A large nitrogen gas cylinder size 1A (250 ft^3). Replacement frequency: Approximately every two days.
- A large, sealed, thermally insulated cylinder containing liquid nitrogen, from which the nitrogen is boiled off. The 230 psi model is recommended. The 35 and 80 psi models do not provide sufficient gas pressure. Typical cylinder size 240 L (5080 ft^3). Replacement frequency: Approximately every month.

  Liquid nitrogen conversion factors: 1.0 lb of liquid nitrogen = 0.5612 L; 1.0 Kg of liquid nitrogen = 1.237 L.
- A nitrogen generator with minimum capacity of 200 ft^3 per day at 99% purity with 100 psi at the side panel. Worst case consumption of nitrogen gas is 30 L/min (56 Standard Cubic Feet per Hour). Nitrogen generators require an air compressor. Some models of air compressor are quite noisy; therefore, be careful to select a quite compressor. Replacement frequency: Continuous source with no replacement required.