

CSA/ANSI HGV 4.1:20 “Standard for hydrogen-dispensing systems”

5.4 Filters

5.4.1

A means shall be provided to protect both the vehicle and the dispenser from gas, liquid, and solid contaminants. The dispenser shall be designed to deliver fuel with gas composition specified by SAE J2719 or ISO 14687-2.

5.4.2

Dispensers shall have inline filters.

5.4.3

Filters shall be of adequate size and construction for the intended application; and have a nominal rating not greater than 5 µm (i.e., 98% efficiency).

5.4.4

The filter shall be installed in such a manner that the force required to install or open the filter will not permanently distort the piping or other components of the dispenser.

Filters shall be able to be isolated and vented and shall be accessible for inspection, cleaning, and replacement. Procedures shall be provided by the dispenser manufacturer to purge the dispenser of contaminants after filter service.

CSA/ANSI HGV 4.9:20 “Hydrogen fuelling stations”

4.4.1 General

The quality of the hydrogen fuel dispensed to the vehicle by the dispenser(s) shall comply with SAE J2719 or ISO 14687-2.

4.5 Filters and separators

Stations shall have means (e.g., filters and separators) to minimize particulate and liquid contamination in the hydrogen, and meet the requirements of Clause [4.4.1](#). Filter(s) and separation devices shall be monitored or inspected as part of the station maintenance and quality plans.

ISO 19880-1:20 “Gaseous hydrogen — Fuelling stations — Part 1: General requirements”

8.5.2 Dispenser fuel filters

To prevent hydrogen containing function-impairing impurities (i.e. particulates) that would affect the high pressure hydrogen system of FCEV, specifically the vehicle CHSS valves, hydrogen filters should be included as part of the dispenser, see [9.9](#). There should be a filter with a capability to prevent particulates of a maximum size of 5 µm with a minimum removal efficiency of 99 % under expected process conditions, or alternatively a 5 µm filter. The filter should be installed upstream of, and as close as possible to, the hose breakaway device. This should filter out the particulate concentration in the hydrogen according to ISO 14687-2.

NOTE ISO 4022, ISO 12500-1 and ISO 12500-3 provide recommended methodologies for the testing of filter efficiencies.

9.9 Filters for gaseous hydrogen

Filters and separators should be sized for the maximum hydrogen gas flow and for the expected impurities in the hydrogen gas, see 8.4.2, and, where appropriate, should be provided with sufficiently large sumps or collecting tanks. As far as possible, filters and separators should be combined in a single unit. The filters should have a specified separating capacity. Where liquids and condensation products require removal, consideration should be given to the dew point of these liquids, relative to the temperatures to which hydrogen is cooled prior to passing through the separator, to avoid freezing and blockage.

Clogging of the filter insert in the main hydrogen gas flow should be monitored. This may be done by regular preventive maintenance, by regular operational checks or by monitoring equipment, e.g. differential-pressure gauges indicating a maximum value, as specified by the filter supplier.

The filters and separators should be arranged and installed in such a way that it is possible to open and empty them in a safe manner. In the event of frequent opening and closing operations, the filters and separators should be fitted with quick opening and closing fittings.

Where a separator is needed for removing liquids and condensation products, a manual or an automatic discharging device, if applicable comprising a sump, should be provided.

The filter should be accessible for inspection, cleaning and replacement of the filter element.