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Standard Practice for Sampling Gas Blow Down Systems and Components for Particulate Contamination by Automatic Particle Monitor Method[1]

This standard is issued under the fixed designation F 327; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice describes how to connect, prepare, and sample pressurized gas systems (having up to 0.75-in. (19.1-mm) diameter lines) for particulate contamination by using an automatic monitor.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For hazard statements, see Section 5.

2. Terminology

2.1 *Definitions:*

2.1.1 *downstream terminal point*—the point in a gas system from which gas is fed into a further system or component, usually the designated "sample port."

2.1.2 *filtered gas system*—a gas system that is equipped with required filtration devices to furnish gas that is suitably clean for the intended application.

2.1.3 *purge*—to flush a gas supply system or component with a regulated flow of gas.

2.1.4 *sample port*—the designated point in a gas system or component from which a representative gas sample may be taken.

3. Summary of Practice

3.1 The pressurized gas system or component and the apparatus are prepared in accordance with the requirements of the users sample analysis procedure. The sensing unit of the automatic particle monitor is connected to the designated sample port which is under purge condition. The system flow-rate is adjusted to the sample flow rate requirement. All the gas passing through the sensing unit is monitored for particulate contamination until the required sample volume has been analyzed.

4. Apparatus

4.1 *Automatic Monitor*, with sensor that sizes and counts all entering fluid in accordance with the users requirements for pressure, flow, temperature, and accuracy.

4.2 *Filtered Gas System*—See Fig. 1.

4.3 *Stop Watch or Timer*, with a + 1, − 0-s resolution.

4.4 *Miscellaneous Fittings*, as needed for sampling point adaption, cleaned and packaged within system contamination requirements.

4.5 *Connecting Lines*, cleaned and packaged within system contamination requirements.

4.6 *Flowmeter*, calibrated for the sample port fluid, flow, and temperature requirements.

5. Hazards

5.1 Personnel must stand clear of exiting gas.

5.2 Ear protection must be used when gas flow approaches sonic velocity.

5.3 All lines and associated system components must be connected and operated within the requirements of recognized safety codes.

6. Procedure

6.1 Establish a minimum continuous purge pressure of 1 psig (6.89 kPa) gage or 0.1 ft^3/min (2.83 dm^3/min), flow from the filtered gas pressure supply.

6.2 Connect one end of a suitable connecting line to the purge outlet of 6.1, and then connect the other end to the inlet of the component or system to be sampled.

NOTE 1—If the system to be sampled is already connected to the filtered gas pressure supply, then establish the purge as noted in 6.1.

6.3 Connect a suitable connecting line from the sample port to the inlet of the automatic monitor sensing device. (When no sample port is designated, use the down-stream terminal point from which purge gas is flowing.)

6.4 Increase the purge to one of the following:

6.4.1 0.3-ft^3/min (8.49-dm^3/min) flow,

6.4.2 5-psig (34.5-kPa) gage pressure, or

6.4.3 5 % of system operating pressure when this pressure is

[1] This practice is under the jurisdiction of ASTM Committee E-21 on Space Simulation and Applications of Space Technology and is the direct responsibility of Subcommittee E21.05 on Contamination.

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