

Diffusive Flow Test

Hydrophilic Capsule

Preface

All integrity test procedures outlined below should be followed when performing integrity testing of membrane filters only. Use of these procedures on other types of filters such as polypropylene or glass fiber capsules will not give consistent or accurate results. Before starting the procedure ensure your system is set up properly. If you need guidance we have instructions here.

Introduction

Diffusive Flow is one common integrity test. In this test, we apply a constant pressure of air (approximately 70% of the membrane bubble point) on the upstream side of the properly wetted membrane filter and then measure the flow rate of air diffused through the filter. This test can precisely detect defects that may cause passage through the filter and can be used to gauge the completeness of a filter's wettability. Follow these instructions to properly perform a diffusive test on your membrane filter.

This test requires a precision Mass Flow meter capable of reading in the expected range of diffusion values. Alternatively, an automated integrity test set up for measuring forward flow air diffusion can be used. If using an automated system, make sure the test parameters are properly set up for the filter to be tested. NOTE: These parameters are not necessarily the same for all membrane filters from different manufacturers.

If necessary, contact
CustomerService@criticalprocess.com for
appropriate parameters for your system.

Diffusive Flow Test Procedure

1. Install and rinse capsule as per Capsule Wetting instructions.
2. Typical setup for diffusion testing using a mass flow meter is shown in Figure 1.
3. Start with all valves in the closed position.
4. Open valve V0.
5. Set the pressure regulator to the required test pressure.
6. Open Valve V1 to pressurize the system and Drain D to purge any remaining liquid from the upstream side.
7. When all upstream liquid has been purged, close Drain D and open V2. Downstream must be open to ambient pressure during the test.
8. If necessary, adjust the pressure regulator to the test pressure specified on the capsule data sheet.
9. Allow the system to equilibrate. The Mass Flow Meter will initially indicate a high value as the system pressurizes, then slowly come down to a stable reading.
10. Record the diffusional airflow.

For diffusion testing using an automated integrity test system, the setup is the same as indicated in the figure below, except replace the mass flow meter with the automated test unit. Make sure the correct parameters are entered for the filter being tested. Follow the integrity system

manufacturer's instructions for conducting the integrity test.

A diffusional flow (diffusion rate) reading higher than the specification indicates that the system is not integral.

Procedure Note

If the capsule appears to fail the initial diffusion test, repeat the Capsule Wetting procedure and increase the rinse time to twice the initial amount to assure that the media has been properly wetted. Then retest. If necessary, check the capsule connections to make sure there are no leaks.

Any Questions?

For help determining the test values or additional information, contact customerservice@criticalprocess.com or call us at (603) 880-4420.

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Last Updated: November 13, 2025

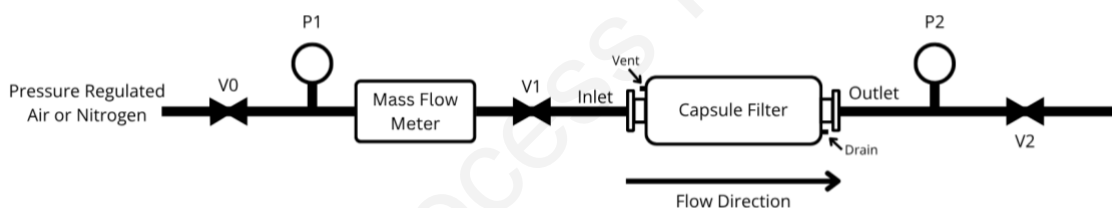


Figure 1: Capsule Diffusion Testing



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