



The Extrans permeation measurement system is a customizable system for testing the behavior and uniformity of polymers and other materials. The system can be used to determine permeation rates using variable temperatures, total pressures, differential pressures and mechanical deformations as well as adjustable concentration levels for gases and liquids. Extrans supports permeation testing from liquid-to-gas or from gas-to-gas phases.

## Features

- User-selected temperature and pressure ranges
- Balanced differential pressure manifold incorporating a back-pressure control valve and regulator
- Adaptable for materials of varying composition, thickness, configuration and permeability
- Programmable for repetitive or complex tasks
- Compact design

## Benefits

- Versatile — able to handle varying degrees of pressure and temperature
- Precise — accurately measures permeation rates
- Portable — can be used for field testing
- Effective — can induce stress in materials to determine the effect on permeation rates

## Applications

- Container analysis and design for storage of food, munitions and moisture-reactive materials

- Materials analysis of conformal coatings for electrical circuit components used in marine, aerospace, defense and other critical applications
- Corrosion studies
- Coating, film and paint evaluation

## Patents & Awards

- U.S. Patent Nos. 7,325,439, 8,171,775, and 8,479,563

## Inventors

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## Technology Readiness Level (1–9)



Technology has been proven to work in its final form and under expected conditions.



## Partnering Opportunities

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Y-12 is seeking an industry partner to fully commercialize this technology.

**If you would like more information, please contact the  
Office of Technology Commercialization and Partnerships:**

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