



DRY MICROBIAL PENETRATION RESISTANCE TESTER

Dry Microbial Penetration Resistance Tester ToronFM™ DMPRT consists of a gas generation system, a detection unit, a control system, and other components. It is designed to perform dry microbial penetration resistance testing on surgical drapes, gowns, and clean air suits.

APPLICATIONS

Standards

1. ISO 22612 Clothing for protection against infectious agents - Test method for resistance to dry microbial penetration

FEATURES

Component

The system is equipped with a biosafety cabinet and an air compressor.

a. Biosafety Cabinet Design:

The biosafety cabinet is designed with four sides of negative pressure: the left and right sides, rear, and bottom walls all serve as negative pressure air ducts. This configuration creates a double-layer isolation with an air curtain and the cabinet body, ensuring the sample remains contained and prevents leakage into the external environment.

b. Biosafety Performance:

Personnel safety is ensured, with microbial colony numbers for the impact sampler at ≤ 10 CFU/time and for the slit sampler at ≤ 5 CFU/time.

c. Air Passage Airtightness:

The air passage is tested under 500pa of pressure for 30 minutes, with a pressure drop of less than 10%. No bubbles are present during the soap bubble test in the penetration section.

d. Air Cleanliness:

The system achieves Class 100 air cleanliness, with dust particles of $\leq 0.5\mu\text{m}$ per liter of air ≤ 0.35

e. Noise Level:

At a height of 30cm from the tabletop and 38cm upward from the front window under the condition that the ambient noise is 55dB, the arithmetic mean of the four directions is $\leq 58\text{db}$ (a)

f. Lighting:

The front window is made of toughened, UV-resistant glass, with lighting at ≥ 680 lux.

g. UV Intensity:

The system features a UV intensity of $\geq 80 \mu\text{W}/\text{cm}^2$.

h. Differential Pressure Display:

The system includes an LCD differential pressure display (30 / 2) with a Ge differential pressure sensor. The display shows the pressure loss of the filter, with a sensor error of $\pm 5\%$.

i. Mechanical Properties:

The equipment's tabletop can support up to 25 kg of pressure without noticeable deformation, such as sinking or bending.

Product Parameter

j. Electrical Resistance:

The system can withstand a voltage of 1500V for 1 minute without breakdown.

k. Liquid Collection Tank:

A liquid collection tank is used to capture splashed liquids in the working area and is equipped with a drain valve.

l. Ultra-High Efficiency Filter:

The ULPA filter achieves a filtration efficiency of over 99.999% (0.3 μ m PAO method), ensuring the working space meets Class 100 cleanliness standards. The system includes a dual-channel digital differential pressure display and an electronic alarm system that monitors the pressure loss of exhaust and supply air filters. It also tracks downdraft and inflow flow rates, triggering an audible and visual alarm when fluctuations exceed 20% of the nominal value. This prompts pre-replacement and maintenance of filters and fans.

m. Front Window Safety Interlock:

If the front window's opening height exceeds the specified limit, an audible and visual alarm is triggered, and the interlocking system is activated. Once the window is returned to the correct height, the alarm and interlock system are automatically deactivated.

THEORY & METHOD

Principle

The test is conducted on samples placed in individual containers. Each container, except one, is filled with talc contaminated with *Bacillus subtilis*, while one container remains uncontaminated as a control. A sedimentation plate is positioned just below each sample within the container.

The system then vibrates the containers using a pneumatic ball vibrator. Any talc that penetrates the sample is collected on the sedimentation plate. Afterward, the plates are removed and incubated. The number of colonies formed is then counted.

TECHNICAL SPECIFICATIONS

Parameter	Specification
Model	ToronFM™ DMPRT
Mode of vibration	Pneumatic ball vibrator
Vibration frequency	20800 times / minute
Vibration force	650N
Work table size	1360mm x 690mm x 520mm (W x D x H)
Worktable media	Marble slab
Experimental container	Stainless steel experimental container
Voltage	Single Phase AC 220V 50Hz (110V is also available)
Dimension	1500mm x 765mm x 1610mm (W x D x H)



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