



# LEAK RATES

Overview leak rates / applications / leak detectors

# LEAK RATES

Applications	Micro-Flow	Mass Extraction	AMI Integrity test	Products
	sccm	mbar l/s	Pa m <sup>3</sup> /s	
 Ventilation in cleanrooms	1 · 10 <sup>8</sup>	1 · 10 <sup>7</sup>	1 · 10 <sup>6</sup>	<b>Micro-Flow</b>  VE2
 Ventilation in large offices	1 · 10 <sup>7</sup>	1 · 10 <sup>6</sup>	1 · 10 <sup>5</sup>	<b>Mass Extraction</b>  ME2
 Flow rate „Manneken Pis“ in Brussels; 2 l/s	1 · 10 <sup>6</sup>	1 · 10 <sup>4</sup>	1 · 10 <sup>3</sup>	<b>Integrity test</b>  AMI
 Open water tap, 0.1 l/s	1 · 10 <sup>5</sup>	1 · 10 <sup>3</sup>	1 · 10 <sup>2</sup>	<b>Portable</b>  MiniTest 300
 Average amount of breath of an adult; 10,000 l/d	1 · 10 <sup>4</sup>	1 · 10 <sup>2</sup>	1 · 10 <sup>1</sup>	<b>Sniffing leak detectors</b>
 Dripping water tap	1 · 10 <sup>3</sup>	1 · 10 <sup>1</sup>	1 · 10 <sup>0</sup>	
 Maximum gas flow rate of a small turbopump	1 · 10 <sup>2</sup>	1 · 10 <sup>0</sup>	1 · 10 <sup>-1</sup>	
 Tightness of an automotive engine	1 · 10 <sup>1</sup>	1 · 10 <sup>-1</sup>	1 · 10 <sup>-2</sup>	
 Waterproof	1 · 10 <sup>0</sup>	1 · 10 <sup>-2</sup>	1 · 10 <sup>-3</sup>	
 Blister packaging	1 · 10 <sup>-1</sup>	1 · 10 <sup>-3</sup>	1 · 10 <sup>-4</sup>	



Gas pipeline; 1 l/h

1 · 10<sup>-2</sup>

1 · 10<sup>-4</sup>

1 · 10<sup>-5</sup>



Air conditioning; 5 g/a

1 · 10<sup>-3</sup>

1 · 10<sup>-5</sup>

1 · 10<sup>-6</sup>



Airbag igniter

1 · 10<sup>-4</sup>

1 · 10<sup>-6</sup>

1 · 10<sup>-7</sup>



Pacemaker

1 · 10<sup>-5</sup>

1 · 10<sup>-7</sup>

1 · 10<sup>-8</sup>



1 cm<sup>2</sup> stainless steel surface, untreated, after 10 h pumping

1 · 10<sup>-6</sup>

1 · 10<sup>-8</sup>

1 · 10<sup>-9</sup>



KATRIN experiment

1 · 10<sup>-7</sup>

1 · 10<sup>-9</sup>

1 · 10<sup>-10</sup>



X-ray tubes

1 · 10<sup>-8</sup>

1 · 10<sup>-10</sup>

1 · 10<sup>-11</sup>



1 cm<sup>2</sup> UHV surface, baked out at 400 °C, after 10 h of pumping

1 · 10<sup>-9</sup>

1 · 10<sup>-11</sup>

1 · 10<sup>-12</sup>



Detection limit of pressure bearing testing according to MIL-STD-8833

1 · 10<sup>-10</sup>

1 · 10<sup>-12</sup>

1 · 10<sup>-13</sup>



Detection limit of outgassing measurement systems

1 · 10<sup>-11</sup>

1 · 10<sup>-13</sup>

1 · 10<sup>-14</sup>

1 · 10<sup>-12</sup>

1 · 10<sup>-14</sup>

1 · 10<sup>-15</sup>

## Helium leak detectors

MiniTest

Sniffing leak detector



ASM 102 S

Portable



ASM 310

Multipurpose



ASM 340  
ASM 340 D  
ASM 340 I

High performance – Mobile



ASM 380

Modular



ASI 35

5 · 10<sup>-5</sup> Pa m<sup>3</sup>/s

Smallest detectable leak rate Micro-Flow

5 · 10<sup>-7</sup> Pa m<sup>3</sup>/s

Smallest detectable leak rate Mass Extraction

5 · 10<sup>-13</sup> Pa m<sup>3</sup>/s

Smallest detectable leak rate for helium leak detectors (Vacuum leak detection)

5 · 10<sup>-10</sup> Pa m<sup>3</sup>/s

Smallest detectable leak rate for helium leak detectors (Sniffing leak detection)



PFEIFFER

VACUUM

www.pfeiffer-vacuum.com

## **VACUUM SOLUTIONS FROM A SINGLE SOURCE**

Pfeiffer Vacuum stands for innovative and custom vacuum solutions worldwide, technological perfection, competent advice and reliable service.

## **COMPLETE RANGE OF PRODUCTS**

From a single component to complex systems:

We are the only supplier of vacuum technology that provides a complete product portfolio.

## **COMPETENCE IN THEORY AND PRACTICE**

Benefit from our know-how and our portfolio of training opportunities!

We support you with your plant layout and provide first-class on-site service worldwide.

Are you looking for a  
perfect vacuum solution?  
Please contact us:

**Pfeiffer Vacuum GmbH**  
Headquarters · Germany  
T +49 6441 802-0

[www.pfeiffer-vacuum.com](http://www.pfeiffer-vacuum.com)

All data subject to change without prior notice. P1 0453 FEN (April 2017/2)

