Leybold

Preface

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Excerpt from the Leybold Full Line Catalog (Edition 2025)

Leybold – Worldwide

Leybold – Pioneers of Vacuum Technology

In the mid-19th century, the company founder Ernst Leybold laid the foundation in Cologne for what would later become a global high-tech company. In a short time, he expanded the range of scientific equipment before selling his business in 1870. Today, his life's work is today continued by Leybold following the proven tradition with a global sales and service network, high competence and expertise.
With over 1600 employees worldwide Leybold, Part of the Atlas Copco Group, is a guarantor for the development, manufacture and sales of vacuum equipment and systems. Solutions include vacuum pumps, boosters and customized systems which are used in a variety of applications according to their specific design and usage.
The main application areas are metallurgy, automotive, coating applications, classic industrial processes, and production processes in the food processing industry. T hey are vital in highly technical applications in analysis, as well as in research and development.
Our capabilities include the development of vacuum pumps and systems based on application-specific and customer-specific needs and the management of process gases. The extensive product portfolio is strengthened by our keen expertise and know-how in the design and simulation of custom vacuum solutions. It is our aim to offer our customers tailor-made products and systems for their respective vacuum needs.
At Leybold, we see ourselves as close partners of our customers and of industries. Our talented employees and our high innovative power ensure constant development to achieve world-wide market leadership. We strive to ensure that our customers around the world the have best possible support in reaching their production goals and challenges. Proximity to our customers is an important factor for us.
That is why our worldwide service network, the extensive after-sales services and the training programs of our Leybold Academy have continued to grow in the last few years. Wherever you are and whatever your vacuum needs, our experts are always ready to guide and support, at all times.

For us, the quality of our products and services is paramount. Our quality program that is specifically adapted to the structures of the company, and which also includes the entire delivery chain, ensures the continuous improvement of all business processes. The satisfaction and the success of our customers is the benchmark for all our quality efforts and guides everything we do.

An important prerequisite is the certification according to DIN EN ISO 9001:2008.

Global Responsibility and Compliance

With excellence, comes responsibility
As a provider of advanced vacuum technology and services, Leybold has established a unique position as a global leader. With our products, systems and services, we always create value for our customers. Furthermore, when it comes to tackling global challenges, we take on a pioneering role.

Compliance is a great asset for us and an important guide for our corporate culture. For us, this means that we adhere to the relevant laws, regulations and internal policies. In addition, it is our desire that in the pursuit of business activities we particularly live up to our ethical and legal responsibility.

A stable set of values is the basis for our behavior towards all parties and for the maintenance of internal as well as external relations.
This can be seen clearly both in the interaction with all of our employees as well as with our customers all over the world. We attach great importance to long-term and stable relationships, rooted in mutual respect at all times.

Please find all Policies Certificates one the website:
https://www.leybold.com/en/download-center/download-documents/policies-and-certificates

The Sales and Service Network

Think Global – Act Local

Our vision is to develop innovative industry solutions for better living conditions. That is why we want to be the world's leading provider of premium high-tech products and services in our industry.

On the basis of close, collaborative customer relationships, we are able to have a substantial effect on the productivity and the value of applications through our solutions. We achieve a high measure of customer satisfaction through market proximity, high reliability and the ability to implement the correct solutions rapidly.

In addition to our production sites in Europe and China, we count on our comprehensive worldwide sales and service network that is precisely tailored to the regional requirements in the respective markets. With our own sales companies, an international service, and representations in over 90 countries, Leybold has one of the largest sales and service networks in the vacuum industry.

With our presence on location, our competent consultation, comprehensive instruction and quick service, we have achieved a competitive advantage, which has been impressively confirmed by our business development over the last years.

Leybold has an area-wide presence in all regions that are relevant for the vacuum market, with its own companies, branch offices and service hubs.

In addition, an online shop provides the possibility of finding and immediately ordering vacuum pumps, spare parts and accessories. The simple order process and quick shipment of the articles also supports our customers' business processes.

Leybold GmbH, Cologne

Leybold (Tianjin), P.R. China

Leybold France S.A., Valence, France

Leybold Dresden GmbH

Leybold USA Inc., Export, Pa., USA

Your current source of information
www.leybold.com

Leybold Vacuum Academy

Empowering Professionals in Vacuum Technology

At Leybold, we believe that mastering vacuum technology requires more than just theory — it demands hands-on experience, expert guidance, and continuous learning. That's why we created the Leybold Vacuum Academy: a dedicated platform for training, development, and technical excellence.

Whether you're just starting out or have years of experience, our Academy helps you build the skills and confidence to work with vacuum systems at every level — from basic principles to advanced applications.

What Makes the Leybold Vacuum Academy Unique?

- Comprehensive Learning Pathways
  Our programs cover the full spectrum of vacuum technology — from rough and fine vacuum to high and ultra-high vacuum systems. You'll gain practical insights that go far beyond textbooks.
- Hands-On Expertise
  Learn how to detect and resolve vacuum leaks, maintain your pumps, and optimize system performance. Our workshops are designed to simulate real-world scenarios, giving you the tools to act with precision and confidence.
- Tailored for Your Needs
  We offer both standard and customized seminars — whether you're a technician, engineer, or non-technical staff member. Every session is built to match your level and goals.
- Protect Your Investment
  Vacuum systems are complex and costly. Proper maintenance and leak testing are essential to ensure reliability and efficiency. Our training helps you safeguard your equipment and maximize uptime.
- Stay Ahead of the Curve
  Technology evolves — and so should your knowledge. We keep you informed about the latest innovations and best practices in vacuum science.

Seminar Portfolio

We offer a wide range of seminars designed to support every stage of your professional journey:

- Fundamentals of Vacuum Technology
- Leak Detection Basics
- Practical Workshops
- Customized Training Programs

Training Locations

Our courses are held at two specialized training centers:

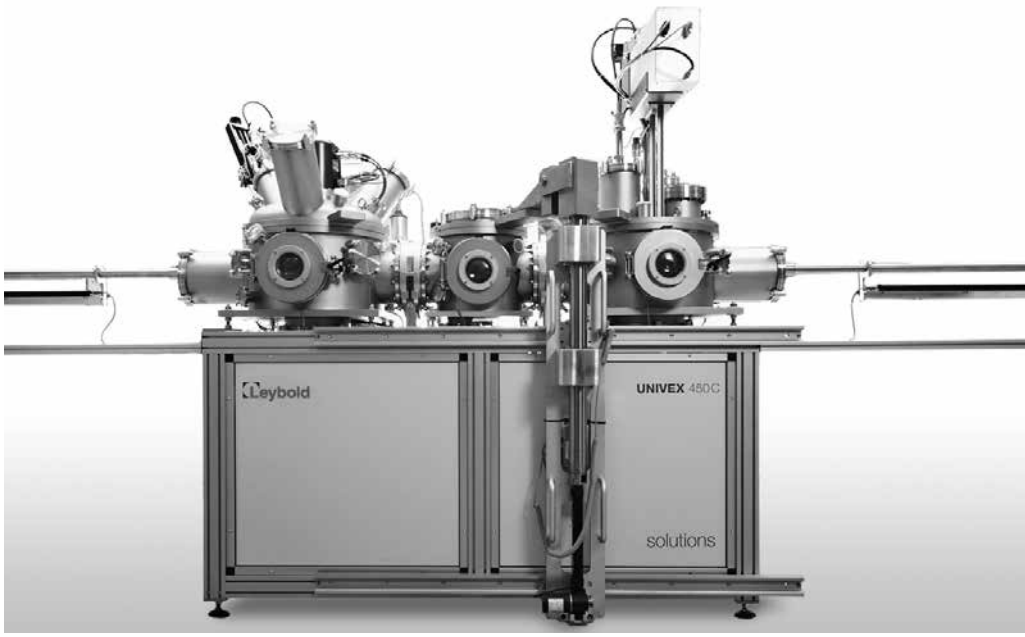
- Cologne, Germany – Leybold GmbH
- Chessington, UK – Leybold UK Ltd.

Both locations provide a modern, well-equipped learning environment where you can connect with experts and peers.

Systems + Solutions

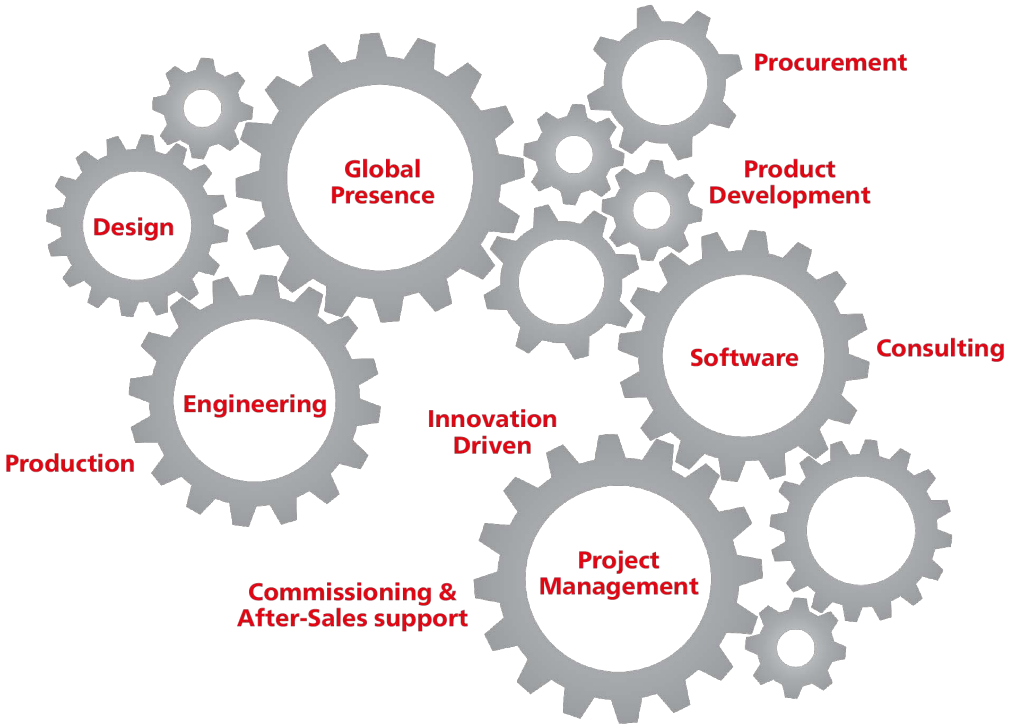
Your partner for tailor-made vacuum solutions

At Systems + Solutions, we combine global expertise with a strong local presence to deliver vacuum systems that seamlessly integrate into your production environment. From concept to completion, we ensure optimal performance, reliability, and long-term value.
Our approach begins with something fundamental: we listen. By understanding your processes, challenges, and expectations, we develop high-quality vacuum solutions that truly elevate your operations. We work alongside you throughout the entire project – from application development to engineering and design – ensuring smooth integration and exceptional results.



Our portfolio includes both standardized systems and highly customized solutions for a wide range of applications and industries. With production sites across the Americas, Europe, and Asia, we provide local assembly, testing, and service capabilities for efficient execution and dependable support. This global footprint ensures fast response times and consistent quality wherever you operate.

Systems + Solutions is your trusted partner in the vacuum industry – innovative, flexible, and always by your side.



Areas of Application

Many things are possible with vacuum

The pleasure of beautiful things, the enjoyment provided by perfect sound quality, the demand for high load capacity and the requirements for ever more powerful products. These are only some of the many demands that can be satisfied only through the targeted use of vacuum technology - be it the finishing of surfaces, the coating of CDs, the manufacturing of heavy-duty components or the production of compact high-performance computers.

With vacuum technology by Leybold, goods and products that enrich our daily lives can be produced more precisely, more economically and much more sustainably. For instance, the titanium coating of watches, the anti-reflective coating on eyeglass lenses, or storage media with ever-increasing capacities. Hermetically sealed food packing, heavy-duty turbine blades, which make our airplanes more reliable and more economical, and flat screens too.

A vacuum that is intelligently produced and applied, is thus able to meet different requirements for the production of things that surround us in everyday life - for a sustainable, better future.

Members of the Leybold staff from sales, marketing, applications consulting and product development are in continuous contact with technology specialists. This guarantees that any application-specific requirements are considered in advance and can be incorporated at an early stage during product development.

Our customers are not buying just vacuum components – they are buying functional, application oriented products for individual solutions.

Products / Applications	Semiconductor production	Vacuum coating	Research and development	Loadlock and transfer chambers	Chemistry / Pharmaceutical	Metallurgy / Furnaces	Lamps and tubes manufacture	Automotive industry	Laser technology	Packaging	Space simulation	Analytical engineering	Environment technologies	Cooling and air-conditioning	Electrical engineering	Mechanical engineering / Electronic	Paper / Printing	Solar energy
TRIVAC B and E Rotary vane vacuum pumps	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■
SOGEVAC Rotary vane vacuum pumps		■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■
VACUBE Screw Vacuum Pumps		■								■				■		■		
DIVAC Diaphragm vacuum pumps				■		■	■	■					■				■	■
SCROLLVAC Scroll Vacuum pumps		■	■	■			■		■				■		■	■		
ECODRY plus Multistage roots vacuum pumps			■								■	■						
LEYVAC Dry compressing vacuum pumps		■	■	■	■	■	■			■	■		■		■	■		■
SCREWLINE Dry compressing vacuum pumps		■	■	■	■	■	■			■	■		■		■	■		■
DRYVAC Dry compressing vacuum pumps		■	■	■		■		■		■	■			■	■			
CLAWVAC Claw vacuum and overpressure pumps										■			■				■	
RUVAC Roots vacuum pumps	■	■	■		■	■	■	■	■	■	■		■		■	■	■	■
Magnetically suspended turbomolecular pumps	■	■	■	■								■						■
Mechanically suspended turbomolecular pumps	■	■	■	■		■	■					■						■
DP and OB Oil diffusion pumps		■	■			■	■	■			■	■				■		
Refrigerator cryopumps	■	■	■	■		■					■	■						■
RUTA vacuum pump systems	■	■	■	■	■	■	■	■		■	■		■	■	■	■		■
TURBOLAB High vacuum pump system		■	■			■	■				■	■			■	■		
UNIVEX high vacuum experimentation systems		■	■									■			■			
Total pressure gauges	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■
Leak detecting instruments	■	■	■		■	■	■	■		■	■	■	■	■	■	■		■
Valves and flange components (ISO-KF, ISO-K, ISO-F, CF)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Ultra high vacuum pumps	■		■								■	■						

Symbols used in Vacuum Technology

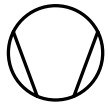
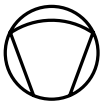
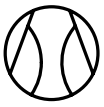
Vacuum Symbols

All symbols, except those marked [1] may be used in any orientation.

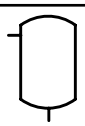
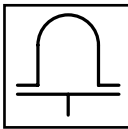
The symbols for vacuum pumps should always be so positioned that the narrowing lines point to the side of higher pressure.

[1] These symbols must only be used in the indicated position (tip of the triangle pointing downwards)

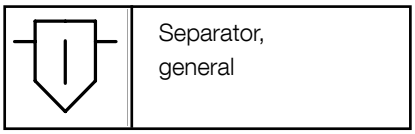
Vacuum Pumps

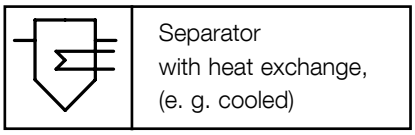
 Vacuum pump, general	Piston vacuum pump	 Diaphragm vacuum pump
Rotary positive displacement pump	Rotary piston vacuum pump	Sliding vane rotary vacuum pump
Rotary plunger vacuum pump	Liquid ring vacuum pump	Roots vacuum pump
Turbine vacuum pump, general	Turboradial vacuum pump	Turboaxial vacuum pump
Turbomolecular pump	 Ejector vacuum pump	Diffusion pump
Adsorption pump	Getter pump	Sputter-ion pump
Cryopump	Scroll vacuum pump	Screw vacuum pump

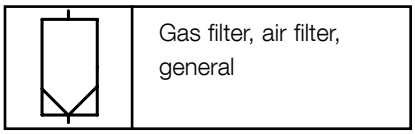
Container

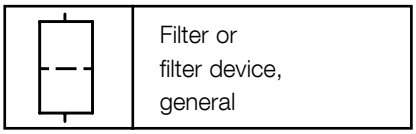
 Vessel with crowned ends, general	 Vacuum bell jar

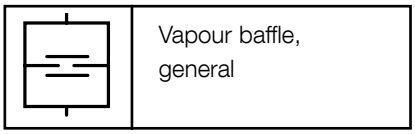
Accessories

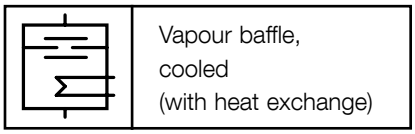

Separator, general

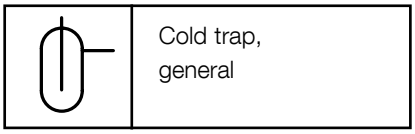

Separator with heat exchange, (e. g. cooled)

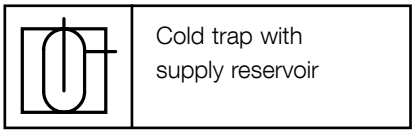

Gas filter, air filter, general

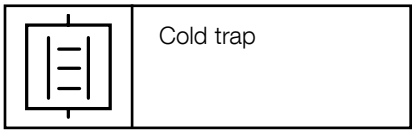

Filter or filter device, general


Vapour baffle, general

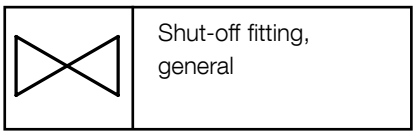

Vapour baffle, cooled (with heat exchange)

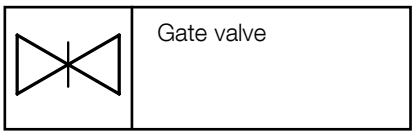

Cold trap, general

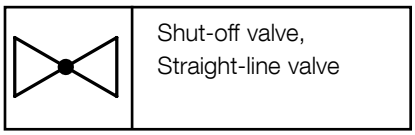

Cold trap with supply reservoir

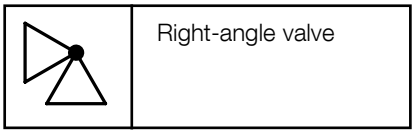

Cold trap

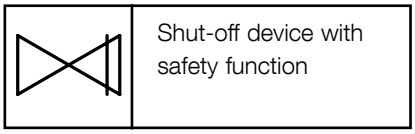
Isolating Devices


Shut-off fitting, general

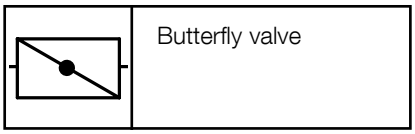

Gate valve

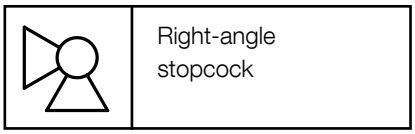

Shut-off valve, Straight-line valve

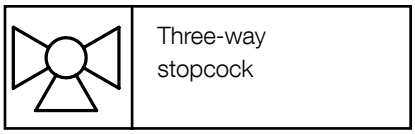

Right-angle valve

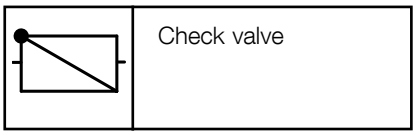

Shut-off device with safety function

Stopcock

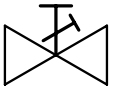
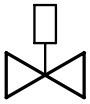
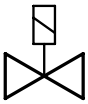
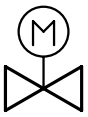

Butterfly valve


Right-angle stopcock

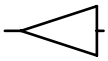

Three-way stopcock


Check valve

Valve Actuation

	Manual operation
	Metering valve
	Fluid drive (hydraulic or magnetic)
	Solenoid operation
	Electric motor drive
	Weight-actuated

Connections and Piping

	Flange connector, general
	Flange connector, bolted
	Small flange connector
	Clamped flange connector
	Threaded pipe connector
	Ball-and-socket joint
	Spigot-and-socket joint
	Connection by taper ground joint
	Flange connector, general
	Change in pipe cross section (e.g. reducer nipple)
	Junction of two pipes with communication
	Cross-over of two pipes without communication
	Branch point
	Bundle pipes
	Port allowing sliding motion, with flange
	Linear motion feedthrough
	Rotary and linear motion feedthrough
	Rotary motion feedthrough
	Electric current feedthrough

Vacuum Measurement and Gauges

	[1] Vacuum (to indicate the presence of a vacuum)
	[1] Vacuum measurement, Vacuum measurement point
	[1] Vacuum gauge
	[1] Recording vacuum gauge (writing)
	[1] Vacuum gauge with analogue display
	[1] Vacuum gauge with digital display
	Flow measurement

[1] These symbols must only be used in the indicated position (tip of the triangle pointing downwards)

Pressure Units

	bar	mbar (hPa)	Pa	atm	Torr	mTorr
1 bar	1	10^3	10^5	0.987	0.750 x 10^3	0.750 x 10^6
1 mbar (hPa)	10^{-3}	1	10^2	0.987 x 10^{-3}	0.750	0.750 x 10^3
1 Pa [1] (N · m^{-2})	10^{-5}	10^{-2}	1	0.987 x 10^{-5}	0.750 x 10^{-2}	0.750 x 10^1
1 atm = 760 Torr	1.01	1.01 x 10^3	1.01 x 10^5	1	0.760 x 10^3	0.760 x 10^6
1 Torr	1.33 x 10^{-3}	1.33	1.33 x 10^2	1.32 x 10^{-3}	1	10^3
1 mTorr	1.33 x 10^{-6}	1.33 x 10^{-3}	1.33 x 10^{-1}	1.32 x 10^{-6}	10^{-3}	1

[1] Pa = Pascal, hPa (Hectopascal) whereat 1 hPa = 1 mbar
The mbar is widely used in research, particularly in the vacuum technology.

All dimensions given in the technical drawings are stated in mm.
Dimensions in ( ) are stated in inch.
The products of Leybold are subject to continual further development; thus the technical data or the dimensional drawings are subject to change without prior notice.

On the basis of international agreements (ISO/R 1000) and the regulations which apply in the Federal Republic of Germany based on these (laws on the units used in metrology) as well as the Vacuum Engineering Standards (DIN 28 400 and subsequent numbers) we have adapted the characteristic quantities stated in this catalog to the current regulations.

The table gives the conversion factors between commonly used pressure units.

1 mbar x l x s^{-1} = 60 sccm

Pressure Units

Conversion Factors

1 inch	2.54 cm
1 ft	30.48 cm
1 sq inch	6.45 cm^2
1 sqft	0.0929 m^2
1 cu inch	923.03 cm^3
1 cu ft	28.32 liter
1 US gallon	3.78 liter
1 Imp gallon	4.54 liter
1 micron	1.33 x 10^{-3} mbar
1 US qt	0.946 liter
1 Imp qt	1.137 liter
1 lb	0.453 kg
1 hp	735 W
1 r.p.m.	1 min^{-1}

Temperature

°C	°F
0	32
10	50
20	68
30	86
40	104
50	122
60	140
70	158
80	176
90	194
100	212

°F = 1.8 x °C + 32

Pressure

psi	bar
1.0	0.07
10	0.70
14.5	1.00
20	1.38
30	2.07
40	2.76
50	3.45
60	4.14
70	4.83
80	5.51
90	6.20
100	6.90

Various pressure units

mbar (millibar)	Torr	inches Hg vacuum
1013	760	0
400	300	18.12
133	100	25.98
4	3	29.80
1	0.75	29.89
0	0	29.92

Various pumping speed units

	$m^3 \times h^{-1}$	$l \times s^{-1}$	cfm
$m^3 \times h^{-1} = m^3/h$	1.0	0.278	0.589
$l \times s^{-1} = l/s$	3.60	1.0	2.12
cfm (cubic feet per minute)	1.699	0.472	1.0

Example: 1 $m^3 \times h^{-1}$ = 0.589 cfm

Please note: The nominal pumping speed of a pump at 60 Hz is 20% higher than at 50 Hz

Dimensions

Inches	Inches	mm
1/8	0.1250	3.1750
1/4	0.2500	6.3500
3/8	0.3750	9.5250
1/2	0.5000	12.7000
3/4	0.7500	19.0500
1/1	1.0000	25.4000

Various flow rate units

	mbar x l x s^{-1}	kg x h^{-1}	$cm^3 \times s^{-1}$	slm
mbar x l x s^{-1}	1.0	4.28 x 10^{-3}	0.987	59.2 x 10^{-3}
kg x h^{-1} (0 °C)	218	1.0	215	12.91
$cm^3 \times s^{-1}$ (NTP)	2.81 x 10^{-4}	1.2 x 10^{-6}	1.0	1.66 x 10^{-5}
slm (standard liter per minute)	16.88	72.15 x 10^{-3}	16.67	1.0