

**SI units - Engineering units (based on the metre)**

		SI units						Engineering units					
from \ to		bar	mbar	µbar	Pa	kPa	MPa	mmHg	mmWS	mWS	kp/mm <sup>2</sup>	kp/cm <sup>2</sup>	atm
SI units	<b>1 bar</b>	1	10 <sup>3</sup>	10 <sup>6</sup>	10 <sup>5</sup>	100	0.1	750.064	10.1972 • 10 <sup>-3</sup>	10.1972	10.1972 • 10 <sup>-3</sup>	1.01972	0.986923
	<b>1 mbar</b>	10 <sup>-3</sup>	1	10 <sup>3</sup>	100	0.1	0.1 • 10 <sup>-3</sup>	750.064 • 10 <sup>-3</sup>	10.1972	10.1972 • 10 <sup>-3</sup>	10.1972 • 10 <sup>-6</sup>	1.01972 • 10 <sup>-3</sup>	0.986923 • 10 <sup>-3</sup>
	<b>1 µbar</b>	10 <sup>-6</sup>	10 <sup>-3</sup>	1	0.1	0.1 • 10 <sup>-3</sup>	0.1 • 10 <sup>-6</sup>	750.064 • 10 <sup>-6</sup>	10.1972 • 10 <sup>-3</sup>	10.1972 • 10 <sup>-6</sup>	10.1972 • 10 <sup>-9</sup>	1.01972 • 10 <sup>-6</sup>	0.986923 • 10 <sup>-6</sup>
	<b>1 Pa</b>	10 <sup>-5</sup>	0.01	10	1	10 <sup>-3</sup>	10 <sup>-6</sup>	7.50064 • 10 <sup>-3</sup>	101.972 • 10 <sup>-3</sup>	101.972 • 10 <sup>-6</sup>	101.972 • 10 <sup>-9</sup>	10.1972 • 10 <sup>-6</sup>	9.86923 • 10 <sup>-6</sup>
	<b>1 kPa</b>	0.01	10	10 • 10 <sup>3</sup>	10 <sup>3</sup>	1	10 <sup>-3</sup>	7.50064	101.972	101.972 • 10 <sup>-3</sup>	101.972 • 10 <sup>-6</sup>	10.1972 • 10 <sup>-3</sup>	9.86923 • 10 <sup>-3</sup>
	<b>1 MPa</b>	10	10 • 10 <sup>3</sup>	10 • 10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>3</sup>	1	7.50064 • 10 <sup>3</sup>	101.972 • 10 <sup>3</sup>	101.972	101.972 • 10 <sup>-3</sup>	10.1972	9.86923
Engineering units	<b>1 mmHg</b>	1.33322 • 10 <sup>-3</sup>	1.33322	1.33322 • 10 <sup>3</sup>	133.322	133.322 • 10 <sup>-3</sup>	133.322 • 10 <sup>-6</sup>	1	13.5951	13.5951 • 10 <sup>-3</sup>	13.5951 • 10 <sup>-6</sup>	1.35951 • 10 <sup>-3</sup>	1.31579 • 10 <sup>-3</sup>
	<b>1 mmWS</b>	98.0665 • 10 <sup>-6</sup>	98.0665 • 10 <sup>-3</sup>	98.0665	9.80665	9.80665 • 10 <sup>-3</sup>	9.80665 • 10 <sup>-6</sup>	73.5561 • 10 <sup>-3</sup>	1	10 <sup>-3</sup>	10 <sup>-6</sup>	0.1 • 10 <sup>-3</sup>	96.7841 • 10 <sup>-6</sup>
	<b>1 mWS</b>	98.0665 • 10 <sup>-3</sup>	98.0665	98.0665 • 10 <sup>3</sup>	9.80665 • 10 <sup>3</sup>	9.80665	9.80665 • 10 <sup>-3</sup>	73.5561	10 <sup>3</sup>	1	10 <sup>-3</sup>	0.1	96.7841 • 10 <sup>-3</sup>
	<b>1 kp/mm<sup>2</sup></b>	98.0665	98.0665 • 10 <sup>3</sup>	98.0665 • 10 <sup>6</sup>	9.80665 • 10 <sup>6</sup>	9.80665 • 10 <sup>3</sup>	9.80665	73.5561 • 10 <sup>3</sup>	10 <sup>6</sup>	10 <sup>3</sup>	1	100	96.7841
	<b>1 kp/cm<sup>2</sup></b>	0.980665	0.980665 • 10 <sup>3</sup>	0.980665 • 10 <sup>6</sup>	98.0665 • 10 <sup>3</sup>	98.0665	98.0665 • 10 <sup>-3</sup>	735.561	10 • 10 <sup>3</sup>	10	0.01	1	0.967841
	<b>1 atm</b>	1.01325	1.01325 • 10 <sup>3</sup>	1.01325 • 10 <sup>6</sup>	101.325 • 10 <sup>3</sup>	101.325	101.325 • 10 <sup>-3</sup>	760	10.3323 • 10 <sup>3</sup>	10.3323	10.3323 • 10 <sup>-3</sup>	1.03323	1

**Corresponding pressure units:**

- 1 Pa = 1 N/m<sup>2</sup>
- 1 hPa = 1 mbar
- 1 mmHg = 1 Torr
- 1 kp/cm<sup>2</sup> = 1 at (atü)

**Notes:**

The table refers to DIN 1301 Part 1 (1993) and Part 3 (1979).  
 In accordance with the Execution Ordinance to the law on units in metrology (Federal German Units Ordinance) from 13th December 1985 only the following units are admissible for pressures:

- pascal (Pa)
- bar (bar)
- millimetre of mercury (mmHg), but only for blood pressure and the pressure of other physical liquids in medicine.

Valid for these units in accordance with Federal German Unit Ordinance are the definitions and conversion factors per DIN 1301.

Listed in Part 1 of this standard:

- pascal as derived SI unit with special name and with special unit symbol
- bar as generally applicable unit outside the SI
- millimetre of mercury as unit outside the SI with limited area of application.

Part 3 of this standard defines amongst other things conversion factors for the following units:

- conventional millimetre of mercury (mmHg)
- conventional metre of water (mWS)
- torr (Torr)
- technical atmosphere (at)
- standard atmosphere (atm) .

## SI units - Engineering units (based on the foot)

		SI units						Engineering units			
	from to	bar	mbar	µbar	Pa	kPa	MPa	psi	ft H <sub>2</sub> O	in. H <sub>2</sub> O	in. Hg
SI units	1 bar	1	10 <sup>3</sup>	10 <sup>6</sup>	10 <sup>5</sup>	100	0.1	14.50377	33.4553	401.463	29.52998
	1 mbar	10 <sup>-3</sup>	1	10 <sup>3</sup>	100	0.1	0.1 • 10 <sup>-3</sup>	14.50377 • 10 <sup>-3</sup>	33.4553 • 10 <sup>-3</sup>	401.463 • 10 <sup>-3</sup>	29.52998 • 10 <sup>-3</sup>
	1 µbar	10 <sup>-6</sup>	10 <sup>-3</sup>	1	0.1	0.1 • 10 <sup>-3</sup>	0.1 • 10 <sup>-6</sup>	14.50377 • 10 <sup>-6</sup>	33.4553 • 10 <sup>-6</sup>	401.463 • 10 <sup>-6</sup>	29.52998 • 10 <sup>-6</sup>
	1 Pa	10 <sup>-5</sup>	0.01	10	1	10 <sup>-3</sup>	10 <sup>-6</sup>	0.1450377 • 10 <sup>-3</sup>	0.334553 • 10 <sup>-3</sup>	4.01463 • 10 <sup>-3</sup>	0.2952998 • 10 <sup>-3</sup>
	1 kPa	0.01	10	10 • 10 <sup>3</sup>	10 <sup>3</sup>	1	10 <sup>-3</sup>	0.1450377	0.334553	4.01463	0.2952998
	1 MPa	10	10 • 10 <sup>3</sup>	10 • 10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>3</sup>	1	0.1450377 • 10 <sup>3</sup>	0.334553 • 10 <sup>3</sup>	4.01463 • 10 <sup>3</sup>	0.2952998 • 10 <sup>3</sup>
Engineering units	1 psi	68.94757 • 10 <sup>-3</sup>	68.94757	68.94757 • 10 <sup>3</sup>	6.894757 • 10 <sup>3</sup>	6.894757	6.894757 • 10 <sup>-3</sup>	1	2.30666	27.6799	2.036020
	1 ft H <sub>2</sub> O	29.8907 • 10 <sup>-3</sup>	29.8907	29.8907 • 10 <sup>3</sup>	2.98907 • 10 <sup>3</sup>	2.98907	2.98907 • 10 <sup>-3</sup>	433.5275 • 10 <sup>-3</sup>	1	12	0.8826709
	1 in. H <sub>2</sub> O	2.49089 • 10 <sup>-3</sup>	2.49089	2.49089 • 10 <sup>3</sup>	0.249089 • 10 <sup>3</sup>	0.249089	0.249089 • 10 <sup>-3</sup>	36.12729 • 10 <sup>-3</sup>	83.3333 • 10 <sup>-3</sup>	1	73.55591 • 10 <sup>-3</sup>
	1 in. Hg	33.86389 • 10 <sup>-3</sup>	33.86389	33.86389 • 10 <sup>3</sup>	3.386389 • 10 <sup>3</sup>	3.386389	3.386389 • 10 <sup>-3</sup>	0.4911542	1.132925	13.59510	1

Corresponding pressure units:

1 Pa = 1 N/m<sup>2</sup>

1 psi = 1 lbf/in.<sup>2</sup>

1 mmHg = 1 Torr

1 kgf/cm<sup>2</sup> = 1 at

### Notes:

The table refers to ISO 31-1:1992 and ISO 31-3:1992.

For lengths ISO 31-1 defines conversion factors for units no longer to be used:

- inch (in)
- foot (ft)

For pressures ISO 31-3 defines conversion factors for units no longer to be used:

- pound-force per square inch (lbf/in.<sup>2</sup>)
- conventional millimetre of water (mmH<sub>2</sub>O)
- conventional millimetre of mercury (mmHg)
- torr (Torr)
- technical atmosphere (at)
- standard atmosphere (atm)



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