

**Pressure unit conversions (exact, corresponding to DIN 1301-3)**

Unit	bar	mbar	Pa N/m <sup>2</sup>	kPa kN/m <sup>2</sup>	MPa MN/m <sup>2</sup>
1 bar	1	1000	10 <sup>5</sup>	100	0,1
1 mbar	0.001	1	100	0.1	10 <sup>-4</sup>
1 Pa 1 N/m <sup>2</sup>	10 <sup>-5</sup>	0.01	1	0.001	10 <sup>-6</sup>
1 kPa 1 kN/m <sup>2</sup>	0.01	10	1,000	1	0.001
1 MPa 1 MN/m <sup>2</sup>	10	10 <sup>4</sup>	10 <sup>6</sup>	1,000	1
1 at 1 kp/cm <sup>2</sup> 1 kgf/cm <sup>2</sup>	0.980665	980.665	0.980665 x 10 <sup>5</sup>	98.0665	0.980665
1 atm	1.01325	1,013.25	1.01325 x 10 <sup>5</sup>	101.325	0.101325
1 mmWS 1 mmCE 1 kp/m <sup>2</sup>	0.980665 x 10 <sup>-4</sup>	0.0980665	9.80665	9.80665 x 10 <sup>-3</sup>	9.80665 x 10 <sup>-6</sup>
1 mWS 1 mCE 10 <sup>3</sup> kp/m <sup>2</sup>	0.980665	98.0665	9,806.65	9.80665	9.80665 x 10 <sup>-3</sup>
1 Torr 1 mmHg 1 mmQS	1.33322 x 10 <sup>-3</sup>	1.33322	133.322	0.13332	0.133322 x 10 <sup>-3</sup>
1 psi 1 lbf/in <sup>2</sup>	6.89476 x 10 <sup>-2</sup>	68.9476	6,894.76	6.89476	6.89476 x 10 <sup>-3</sup>

at kp/cm <sup>2</sup> kgf/cm <sup>2</sup>	atm	mmWS mmCE kp/m <sup>2</sup>	mWS mCE 10 <sup>3</sup> kp/m <sup>2</sup>	Torr mmHg mmQS	psi lbf/in <sup>2</sup>
1.019716	0.986923	1.019716 x 10 <sup>4</sup>	10.19716	750.0638	14.503774
1.019716 x 10 <sup>-3</sup>	0.986923 x 10 <sup>-3</sup>	10.19716	0.01019716	7.500638	0.014503774
1.019716 x 10 <sup>-5</sup>	0.986923 x 10 <sup>-5</sup>	0.1019716	1.019716 x 10 <sup>-4</sup>	7.500638 x 10 <sup>-3</sup>	1.4503774 x 10 <sup>-4</sup>
0.01019716	9.86923 x 10 <sup>-3</sup>	101.9716	0.1019716	7.500638	0.14503774
10.19716	9.86923	1.019716 x 10 <sup>5</sup>	101.9716	7,500.638	145.03774
1	0.967841	10 <sup>4</sup>	10	735.561273	14.223343
1.03323	1	1.033227 x 10 <sup>4</sup>	10.33227	760.0021	14.695949
10 <sup>-4</sup>	9.67841 x 10 <sup>-5</sup>	1	0.001	0.073556	1.422334 x 10 <sup>-3</sup>
0.1	0.0967841	1,000	1	73.556127	1.422334
1.359506 x 10 <sup>-3</sup>	1.315786 x 10 <sup>-3</sup>	13.59506	1.359506 x 10 <sup>-2</sup>	1	1.933672 x 10 <sup>-2</sup>
7.0307 x 10 <sup>-2</sup>	0.068046	703.06958	0.70307	51.715075	1

## Guideline values for pressure loss at rubber expansion joints

Resistance number  $\zeta$

