

단위 환산표(공학용)

길이 질량 압력 각속도 열전도율	면적 밀도 속도 체적유량 열전도계수	체적 힘 점도 일,에너지 및 열량 비열	두량 응력 동점도 일률
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cm	m	in	ft
1	0.01	0.3937	0.03281
100	1	39.37	3.281
2.540	0.0254	1	0.08333
30.48	0.3048	12	1

cm ²	m ²	in ²	ft ²
1	0.0001	0.155	0.001076
1×10 ⁴	1	1550	10.76
6.452	0.000645	1	0.006944
929.0	0.09290	144	1

cm ³	m ³	in ³	ft ³
1	1E-6	0.06102	0.00003531
1E6	1	61020	35.31
16.39	0.00001639	1	0.0005787
28320	0.02832	1728	1

m ³	gal(UK)	gal(US)	ℓ
1	220.0	264.2	1000
0.004546	1	1.201	4.546
0.003785	0.8327	1	3.785
0.001	0.2200	0.2642	1

(Ex) 1gal(US)=231in³, 1ft³=7.48 gal(US)

kg	t	lb	ton	sh tn
1	0.001	2.20462	0.0009842	0.0011023
1000	1	2204.62	0.9842	1.1023
0.45359	0.00045359	1	0.0004464	0.00055
1016.05	1.01605	2240	1	1.12
907.185	0.907185	2000	0.89286	1

(Ex) t:톤, ton:영국톤(long ton), sh tn :미국톤(short ton)

g/m^3	kg/m^3	lb/in^3	lb/ft^3
1	1000	0.03613	62.43
0.001	1	0.00003613	0.06243
27.68	27680	1	1728
0.01602	16.02	0.0005787	1

(Ex) $1g/cm^3 = 1t/m^3$

N	dyn	kgf	lbf	pdl
1	1E5	0.101972	0.2248	7.233
1E-5	1	1.01972E-6	2.248E-6	7.233E-5
9.80665	9.80665E5	1	2.205	70.93
4.44822	4.44822E5	0.4536	1	32.17
0.138255	1.38255E4	0.01410	0.03108	1

(Ex) 1 dyn=1E-5N, 1 pdl(파운달) = 1ft·lb/s²

kgf/cm^2	kgf/mm^2	Pa	N/mm²	lbf/ft²
1	1E-2	0.980665E5	0.0980665	2048
1E2	1	0.980665E7	9.80665	2.048E5
1.0197E-5	1.0197E-7	1	1E-6	0.02089
10.1972	0.101972	1E6	1	2.089E4
0.0004882	4.882E-6	47.86	4.788E-5	1

(Ex) 1 N/mm²= 1MPa

kgf/cm^2	bar	Pa	atm	mH₂ O	mHg	lbf/in²
1	0.980665	0.980665E5	0.9678	10.000	0.7356	14.22
1.0197	1	1E5	0.9869	10.197	0.7501	14.50
1.0197E-5	1E-5	1	0.9869E-5	1.0197E-4	7.501E-6	1.450E-4
1.0332	1.01325	1.01325E5	1	10.33	0.760	14.70
0.10000	0.09806	9.80665E3	0.09678	1	0.07355	1.422
1.3595	1.3332	1.3332E5	1.3158	13.60	1	19.34
0.07031	0.06895	6.895E3	0.06805	0.7031	0.05171	1

(Ex) 1 Pa = 1 N/m², 1 bar= 1E5 Pa, 1lbf/in²= 1 psi, 1 Pa = 7.5 E-3 torr (Ex) 1ksi = 1000psi(英 ksi : kips per square inch)

m/s	km/h	kn(미터법)	ft/s	mile/h
1	3.6	1.944	3.281	2.237
0.2778	1	0.5400	0.9113	0.6214
0.5144	1.852	1	1.688	1.151
0.3048	1.097	0.5925	1	0.6818
0.4470	1.609	0.8690	1.467	1

(Ex) kn : 노트, 미터법 1 노트= 1852m/h

cP	P	Pa·s	kgf·s/m ²	lbf·s/in ²
1	0.01	0.001	0.00010197	1.449E-7
100	1	0.1	0.0101973	1.449E-5
1000	10	1	0.101973	1.449E-4
9806.65	98.0665	9.80665	1	0.001422
6.9E6	6.9E4	6.9E3	7.03E2	1

(Ex) 1P= 1dyn·s/cm²= 1g/cm·s, 1Pa·s= 1N·s/m², 1cP=1mPa·s, 1lbf·s/in²= 1Reyn =6.9E6cP

cSt	St	m ² /s	ft ² /s
1	1E-2	1E-6	0.00001076
100	1	1E-4	0.001076
1E6	1E4	1	10.76
92900	929.0	0.09290	1

(Ex) 1 St = 1 cm²/s

rpm	rad/s
1	0.1047
9.549	1

(Ex) 1 rad=57.296°, rpm= r/min

J	kgf·m	kW·h	kcal	ft·lbf	Btu
1	0.10197	2.778E-7	2.389E-4	0.7376	9.480E-4
9.807	1	2.724E-6	2.343E-3	7.233	9.297E-3
3.6E6	3.671E5	1	860.0	2.655E6	3413
4186	426.9	1.163E-3	1	3087	3.968
1.356	0.1383	3.766E-7	3.239E-4	1	1.285E-3
1055	107.6	2.930E-4	0.2520	778.0	1

(Ex) 1J=1W·s, 1kgf·m=9.80665J, 1 W·h = 3600 W·s, 1 cal = 4.18605 J

ℓ/s	ℓ/min	m^3/s	m^3/min	m^3/h	ft^3/s
1	60	1E-3	0.06	3600	0.03532
0.01666	1	1.66666E-5	1E-3	6E-2	0.00059
1E3	6E4	1	60	3600	35.31
1.66666E1	1E3	1.66666E-2	1	60	0.5885
2.77777E-4	1.66666E1	2.77777E-4	1.66666E-2	1	0.00981
2.832E1	1.69833E3	2.832E-2	1.69833	101.9	1

kW	kgf-m/s	PS	HP	kcal/s	ft-lbf/s	Btu/s
1	101.97	1.3596	1.3405	0.2389	737.6	0.9480
9.807E-3	1	1.333E-2	1.315E-2	2.343E-3	7.233	9.297E-3
0.7355	75	1	0.9859	0.1757	542.5	0.6973
0.746	76.07	1.0143	1	0.1782	550.2	0.7072
4.186	426.9	5.691	5.611	1	3087	3.968
1.356E-3	0.1383	1.843E-3	1.817E-3	3.239E-4	1	1.285E-3
1.055	107.6	1.434	1.414	0.2520	778.0	1

(Ex) W : SI 단위, 1 W=1J/s, 1kgf-m/s=9.80665W, PS: 佛마력, HP : 英마력

kcal/m-h-°C	Btu/ft-h-°F	W/(m-K)
1	0.6720	1.163
1.488	1	1.731
0.8600	0.5779	1

(Ex) W/(m-K) : SI단위, 1 cal(it)=4.1868J

kcal/m ² -h-°C	Btu/ft ² -h-°F	J/m ² -h-°C	W/(m ² -K)
1	0.2048	4187	1.163
4.882	1	2.044E4	5.678
2.389E-4	4.893E-5	1	2.778E-4
0.8598	0.1761	3599	1

(Ex) W/(m²-K) : SI단위, 1 cal=4.18605 J

kcal/m²·h·°C	Btu/ft²·h·°F	J/m²·h·°C	W/(m²·K)
1	0.2048	4187	1.163
4.882	1	2.044E4	5.678
2.389E-4	4.893E-5	1	2.778E-4
0.8598	0.1761	3599	1

(Ex) W/(m²·K) : SI단위, 1 cal=4.18605 J

J/(kg·K)	kcal/(kg·°C)	Btu/(lb·°R)
1	2.38889E-4	2.38889E-4
4.18605E3	1	1