



# Inhaltsverzeichnis

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## Modul:Val/units/sandbox

Die Dokumentation für dieses Modul kann unter [Modul:Val/units/sandbox/Doku](#) erstellt werden

```
-- Definitions for units known to val
-- File format is two strings and a return statement with them in it:
-- string in quotes [= [ ... builtin_units ... ]=].
-- string in quotes [= [ ... builtin_units_long_scale ... ]=].
-- First string, builtin_units, is short-scale, second string is long scale.

-- Entry format:
-- One record per line, starting in first column, having 2-4 fields.
-- Field separator: two or more spaces
-- Between first and second fields: two or more spaces
-- Between all other fields: two or more spaces, or one or more tabs
-- Entries without two spaces in them are ignored.

-- There must be a blank line before the first entry and after the last.
-- I.e. the first two and last two characters of the string must be newlines.

-- Format of entry. Two record types:
--
-- One record type is a wikilink:
-- Unit-code      [[ pagename | Symbol-accepts-HTML-only ]]
-- Text-field separator is still two spaces. Two spaces not allowed in wikilink
--
-- The other record type is all fields:
-- Unit-code      symbol-accepts-HTML-only      pagename#section-OK
--
-- Plus there is an optional field that goes at the end after two or more spaces
-- Whether it is a number or an equation or the letters SI,
-- any of these three has the same function: a wikipable sorting "scale".
-- It is for sorting, and it works for either record type.
-- Difference is SI can't accept HTML. But SI correctly scales any SI prefix.
-- (Optional fields ALIAS and NOSPAC and ANGLE are for advanced users.)

-- "Invalid unit" error:
-- Using SI requires that the symbol equal unit-code, so never allows HTML.
-- Any difference between SI or symbol must be an SI prefix, such as k, M, or G.
-- A space at the end of an entry is an error. No space at each EOL.

local builtin_units = [=

== Test ==
Foo  [[Hz|<samp>Foo</samp>]]
Baz  [[Hertz|baz<sub>0</sub>]]
Baz  [[Kelvins|baz<sub>0</sub>]]
Bar  [[Foobar|bar<abbr title="super duper">0</abbr>]]
quux [[Foobar|<span title="super duper 2">bar0</span>]]

== Unsorted units ==
c0  [[Speed of light#Numerical value, notation, and units|'c''<sub>0</sub>]]
lbf [[Pound (force)|<span title="pound-force">lb<sub>F</sub></span> ]]
N.s [[Newton-second|N&sdot;s]]
J.K-1 [[Joule per kelvin|J&sdot;K<sup>-1</sup>]]
C.mol-1 [[Faraday constant|C&sdot;mol<sup>-1</sup>]]
C/mol [[Faraday constant|C/mol]]
C.kg-1 [[Roentgen (unit)|C&sdot;kg<sup>-1</sup>]]
C/kg  [[Roentgen (unit)|C/kg]]
F.m-1 [[vacuum permittivity|F&sdot;m<sup>-1</sup>]]
```



```

F/m [[vacuum permittivity|F/m]]
e [[Elementary charge|'e']]
kB [[Kilobyte|kB]] 8e3
MB [[Megabyte|MB]] 8e6
GB [[Gigabyte|GB]] 8e9
TB [[Terabyte|TB]] 8e12
lx [[Lux (unit)|lx]]
nat [[nat (unit)|nat]]

== Time and frequency ==
byte/s [[Data rate units|byte/s]] 8
kB/s [[Data rate units#Kilobyte per second|<span title="Kilobytes per second">kB/s</span>]]
MB/s [[Data rate units#Megabyte per second|<span title="Megabytes per second">MB/s</span>]]
GB/s [[Data rate units#Gigabyte per second|<span title="Gigabytes per second">GB/s</span>]]
TB/s [[Data rate units#Terabyte per second|<span title="Terabytes per second">TB/s</span>]]
bit/s [[Bit per second|bit/s]] 1
bps [[Bit per second|bit/s]] 1
kbit/s [[Kilobit per second|kbit/s]] 1e3
Mbit/s [[Megabit per second|Mbit/s]] 1e6
Gbit/s [[Gigabit per second|Gbit/s]] 1e9
Tbit/s [[Terabit per second|Tbit/s]] 1e12
kT/s [[Transfer (computing)|<span title="Kilo transfers per second">kT/s</span>]]
MT/s [[Transfer (computing)|<span title="Mega transfers per second">MT/s</span>]]
GT/s [[Transfer (computing)|<span title="Giga transfers per second">GT/s</span>]]
year [[Year|year]] 31557600
years [[Year|years]] 31557600
yr [[Year#Symbols y and yr|yr]] 31557600
y [[Year|y]] 31557600
a [[Annum|a]] 31557600
Ga [[Gigaannum|Ga]] 3155760000000000
Ma [[Megaannum|Ma]] 31557600000000
ka [[Kiloannum|ka]] 31557600000
kyr [[kyr|kyr]] 31557600000
kya [[kyr|kya]] 31557600000
myr [[myr|myr]] 315576000000000
mya [[Mya (unit)|mya]] 315576000000000
byr [[Billion years|byr]] 3155760000000000000
bya [[Billion years ago|bya]] 3155760000000000000
Gyr [[billion years|Gyr]] 3155760000000000000
BP [[Before present|BP]]
uBP [[Radiocarbon dating#Calibration|<sup>14</sup>C yr BP]]
BC [[Before Christ|BC]] -1
AD [[Anno Domini|AD]] 1
BCE [[Before the Common Era|BCE]] -1
CE [[Common Era|CE]] 1
JD [[Julian date|JD]] 1
MJD [[Modified Julian date|MJD]] 1

s-1 [[Second|s<sup>-1</sup>]]
s-2 [[Second|s<sup>-2</sup>]]
s2 [[Second|s<sup>2</sup>]]

s [[Second|s]] SI
as [[Attosecond|s]] SI
cs [[Second|s]] SI
das [[Second|s]] SI
ds [[Second|s]] SI
Es [[Second|s]] SI
fs [[Femtosecond|s]] SI
Gs [[Second|s]] SI
hs [[Second|s]] SI
ks [[Second|s]] SI
ms [[Millisecond|s]] SI
µs [[Microsecond|s]] SI

```



```

us [[Microsecond|s]] SI
Ms [[Second|s]] SI
ns [[Nanosecond|s]] SI
ps [[Picosecond|s]] SI
Ps [[Second|s]] SI
Ts [[Second|s]] SI
Ys [[Second|s]] SI
ys [[Yoctosecond|s]] SI
Zs [[Second|s]] SI
zs [[Zeptosecond|s]] SI

```

```

Hz [[Hertz|Hz]] SI
aHz [[Hertz|Hz]] SI
cHz [[Hertz|Hz]] SI
daHz [[Hertz|Hz]] SI
dHz [[Hertz|Hz]] SI
EHZ [[Hertz|Hz]] SI
fHz [[Hertz|Hz]] SI
hHz [[Hertz|Hz]] SI
GHz [[Gigahertz|Hz]] SI
kHz [[Kilohertz|Hz]] SI
MHz [[Megahertz|Hz]] SI
mHz [[Hertz|Hz]] SI
uHz [[Hertz|Hz]] SI
µHz [[Hertz|Hz]] SI
nHz [[Hertz|Hz]] SI
pHz [[Hertz|Hz]] SI
PHz [[Hertz|Hz]] SI
THz [[Hertz|Hz]] SI
yHz [[Hertz|Hz]] SI
YHz [[Hertz|Hz]] SI
zHz [[Hertz|Hz]] SI
ZHz [[Hertz|Hz]] SI

```

== Length, area, volume ==

```

Å3 [[Ångström|Å<sup>3</sup>]]
fb-1 [[Barn (unit)|fb<sup>-1</sup>]]
m-1 [[Metre|m<sup>-1</sup>]]
m-2 [[Square metre|m<sup>-2</sup>]]
m-3 [[Cubic metre|m<sup>-3</sup>]]
km2 [[Square kilometre|km<sup>2</sup>]]
km3 [[Cubic kilometre|km<sup>3</sup>]]
µm2 [[Square metre|µm<sup>2</sup>]]
um2 [[Square metre|µm<sup>2</sup>]]
am2 [[Square metre|am<sup>2</sup>]]
cm2 [[Square centimetre|cm<sup>2</sup>]]
dam2 [[Square metre|dam<sup>2</sup>]]
dm2 [[Square metre|dm<sup>2</sup>]]
Em2 [[Square metre|Em<sup>2</sup>]]
fm2 [[Square metre|fm<sup>2</sup>]]
Gm2 [[Square metre|Gm<sup>2</sup>]]
hm2 [[Square metre|hm<sup>2</sup>]]
mm2 [[Square metre|mm<sup>2</sup>]]
Mm2 [[Square metre|Mm<sup>2</sup>]]
nm2 [[Square metre|nm<sup>2</sup>]]
pm2 [[Square metre|pm<sup>2</sup>]]
Pm2 [[Square metre|Pm<sup>2</sup>]]
Tm2 [[Square metre|Tm<sup>2</sup>]]
ym2 [[Square metre|ym<sup>2</sup>]]
Ym2 [[Square metre|Ym<sup>2</sup>]]
zm2 [[Square metre|zm<sup>2</sup>]]
Zm2 [[Square metre|Zm<sup>2</sup>]]
gal [[Gallon|gal]]
Gal [[Gal (unit)|Gal]]

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```
uGal [[Gal (unit)|μGal]]
μGal [[Gal (unit)|μGal]]
mGal [[Gal (unit)|mGal]]

b [[Barn (unit)|b]] SI
ab [[Barn (unit)|b]] SI
cb [[Barn (unit)|b]] SI
dab [[Barn (unit)|b]] SI
db [[Barn (unit)|b]] SI
Eb [[Barn (unit)|b]] SI
fb [[Barn (unit)|b]] SI
Gb [[Barn (unit)|b]] SI
hb [[Barn (unit)|b]] SI
kb [[Barn (unit)|b]] SI
mb [[Barn (unit)|b]] SI
μb [[Barn (unit)|b]] SI
ub [[Barn (unit)|b]] SI
Mb [[Barn (unit)|b]] SI
nb [[Barn (unit)|b]] SI
pb [[Barn (unit)|b]] SI
Pb [[Barn (unit)|b]] SI
Tb [[Barn (unit)|b]] SI
Yb [[Barn (unit)|b]] SI
yb [[Barn (unit)|b]] SI
Zb [[Barn (unit)|b]] SI
zb [[Barn (unit)|b]] SI

== Velocity and acceleration ==
m.s-2 [[Metre per second squared|m&sdot;s<sup>-2</sup>]]
m/s2 [[Metre per second squared|m/s<sup>2</sup>]]
m.s-1 [[Metre per second|m&sdot;s<sup>-1</sup>]]
m/s [[Metre per second|m/s]]
km.s-1 [[Metre per second|km&sdot;s<sup>-1</sup>]]
km/s [[Metre per second|km/s]]

== Mass and energy ==
lm [[Pound (mass)|<span title="pound-mass">lm</span>]]
uJ [[Joule|μJ]]
J.s [[Joule-second|J&sdot;s]]
kWh [[Kilowatt hour|kWh]]
kW.h [[Kilowatt hour|kW&sdot;h]]
J/C [[Volt|J/C]]
J/kg [[Joule|J/kg]]

Da [[Dalton (unit)|Da]] SI
EDa [[Dalton (unit)|Da]] SI
PDa [[Dalton (unit)|Da]] SI
TDa [[Dalton (unit)|Da]] SI
GDa [[Dalton (unit)|Da]] SI
MDa [[Dalton (unit)|Da]] SI
kDa [[Dalton (unit)|Da]] SI
mDa [[Dalton (unit)|Da]] SI
uDa [[Dalton (unit)|Da]] SI
μDa [[Dalton (unit)|Da]] SI
nDa [[Dalton (unit)|Da]] SI
pDa [[Dalton (unit)|Da]] SI
fDa [[Dalton (unit)|Da]] SI
aDa [[Dalton (unit)|Da]] SI

g [[Gram|g]] SI
ag [[Attogram|g]] SI
cg [[Centigram|g]] SI
dag [[Gram|g]] SI
dg [[Decigram|g]] SI
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```
Eg [[Exagram|g]] SI
fg [[Femtogram|g]] SI
Gg [[Gigagram|g]] SI
hg [[Kilogram#SI multiples|g]] SI
kg [[Kilogram|g]] SI
mcg [[Microgram|g]] SI
Mg [[Megagram|g]] SI
mg [[Milligram|g]] SI
ug [[Microgram|g]] SI
µg [[Microgram|g]] SI
ng [[Nanogram|g]] SI
Pg [[Petagram|g]] SI
pg [[Picogram|g]] SI
Tg [[Tonne|g]] SI
yg [[Yoctogram|g]] SI
Yg [[Yottagram|g]] SI
zg [[Zeptogram|g]] SI
Zg [[Zettagram|g]] SI

== Pressure and density ==
psi [[Pounds per square inch|psi]]
g.cm-3 [[Gram per cubic centimetre|g&sdot;cm<sup>-3</sup>]]
g/cm3 [[Gram per cubic centimetre|g/cm<sup>3</sup>]]
kg.m-3 [[Kilogram per cubic metre|kg&sdot;m<sup>-3</sup>]]
kg/m3 [[Kilogram per cubic metre|kg/m<sup>3</sup>]]
kg/cm3 [[Density#Formula and common units|kg/cm<sup>3</sup>]]
g/L [[Gram per litre|g/L]]
g/l [[Gram per litre|g/l]]
mcg/dL [[Gram per litre|µg/dL]]
mcg/dl [[Gram per litre|µg/dl]]
mg/mL [[Gram per litre|mg/mL]]
mg/ml [[Gram per litre|mg/ml]]
ug/dL [[Gram per litre|µg/dL]]
ug/dl [[Gram per litre|µg/dl]]
µg/dL [[Gram per litre|µg/dL]]
µg/dl [[Gram per litre|µg/dl]]
mg.L-1 [[Gram per litre|<abbr title="milligrams per liter">mg/L</abbr>]]
mg/L [[Gram per litre|<abbr title="milligrams per liter">mg/L</abbr>]]
mg.l-1 [[Gram per litre|<abbr title="milligrams per liter">mg/l</abbr>]]
mg/l [[Gram per litre|<abbr title="milligrams per liter">mg/l</abbr>]]

== Fracture toughness ==
MPa.m.5 [[Fracture toughness|MPa&sdot;m<sup>1/2</sup>]]
kPa.m.5 [[Fracture toughness|kPa&sdot;m<sup>1/2</sup>]]
Pa.m.5 [[Fracture toughness|Pa&sdot;m<sup>1/2</sup>]]

== Temperature ==
degC °C ALIAS
degF °F ALIAS
degR °R ALIAS

K [[Kelvin|K]] SI
YK [[Yottakelvin|K]] SI
ZK [[Zettakelvin|K]] SI
EK [[Kelvin|K]] SI
PK [[Petakelvin|K]] SI
TK [[Terakelvin|K]] SI
GK [[Gigakelvin|K]] SI
MK [[Megakelvin|K]] SI
kK [[Kilokelvin|K]] SI
hK [[Hectokelvin|K]] SI
daK [[Decakelvin|K]] SI
dK [[Decikelvin|K]] SI
cK [[Centikelvin|K]] SI
```



```
mK [[Millikelvin|K]] SI
µK [[Microkelvin|K]] SI
uK [[Microkelvin|K]] SI
nK [[Nanokelvin|K]] SI
pK [[Picokelvin|K]] SI
fK [[Femtokelvin|K]] SI
aK [[Attokelvin|K]] SI
zK [[Zeptokelvin|K]] SI
yK [[Yoctokelvin|K]] SI

== Electromagnetism ==
Wb [[Weber (unit)|Wb]]
N.A-2 [[Permeability (electromagnetism)|N&sdot;A<sup>-2</sup>]]
H.m-1 [[Permeability (electromagnetism)|H&sdot;m<sup>-1</sup>]]
V.m-1 [[Electric field|V&sdot;m<sup>-1</sup>]]
V/m [[Electric field|V/m]]

C [[Coulomb|C]] SI
YC [[Coulomb|C]] SI
ZC [[Coulomb|C]] SI
EC [[Coulomb|C]] SI
PC [[Coulomb|C]] SI
TC [[Coulomb|C]] SI
GC [[Coulomb|C]] SI
MC [[Coulomb|C]] SI
kC [[Coulomb|C]] SI
hC [[Coulomb|C]] SI
daC [[Coulomb|C]] SI
dC [[Coulomb|C]] SI
cC [[Coulomb|C]] SI
mC [[Coulomb|C]] SI
µC [[Coulomb|C]] SI
uC [[Coulomb|C]] SI
nC [[Coulomb|C]] SI
pC [[Coulomb|C]] SI
fC [[Coulomb|C]] SI
aC [[Coulomb|C]] SI
zC [[Coulomb|C]] SI
yC [[Coulomb|C]] SI

F [[Farad|F]] SI
YF [[Farad|F]] SI
ZF [[Farad|F]] SI
EF [[Farad|F]] SI
PF [[Farad|F]] SI
TF [[Farad|F]] SI
GF [[Farad|F]] SI
MF [[Farad|F]] SI
kF [[Farad|F]] SI
hF [[Farad|F]] SI
daF [[Farad|F]] SI
dF [[Farad|F]] SI
cF [[Farad|F]] SI
mF [[Farad|F]] SI
µF [[Farad|F]] SI
uF [[Farad|F]] SI
nF [[Farad|F]] SI
pF [[Farad|F]] SI
fF [[Farad|F]] SI
aF [[Farad|F]] SI
zF [[Farad|F]] SI
yF [[Farad|F]] SI

H [[Henry (unit)|H]] SI
```



```
YH [[Henry (unit)|H]] SI
ZH [[Henry (unit)|H]] SI
EH [[Henry (unit)|H]] SI
PH [[Henry (unit)|H]] SI
TH [[Henry (unit)|H]] SI
GH [[Henry (unit)|H]] SI
MH [[Henry (unit)|H]] SI
kH [[Henry (unit)|H]] SI
hH [[Henry (unit)|H]] SI
daH [[Henry (unit)|H]] SI
dH [[Henry (unit)|H]] SI
cH [[Henry (unit)|H]] SI
mH [[Henry (unit)|H]] SI
µH [[Henry (unit)|H]] SI
uH [[Henry (unit)|H]] SI
nH [[Henry (unit)|H]] SI
pH [[Henry (unit)|H]] SI
fH [[Henry (unit)|H]] SI
aH [[Henry (unit)|H]] SI
zH [[Henry (unit)|H]] SI
yH [[Henry (unit)|H]] SI
```

```
A [[Ampere|A]] SI
YA [[Ampere|A]] SI
ZA [[Ampere|A]] SI
EA [[Ampere|A]] SI
PA [[Ampere|A]] SI
TA [[Ampere|A]] SI
GA [[Ampere|A]] SI
MA [[Ampere|A]] SI
kA [[Ampere|A]] SI
hA [[Ampere|A]] SI
daA [[Ampere|A]] SI
dA [[Ampere|A]] SI
cA [[Ampere|A]] SI
mA [[Ampere|A]] SI
µA [[Ampere|A]] SI
uA [[Ampere|A]] SI
nA [[Ampere|A]] SI
pA [[Ampere|A]] SI
fA [[Ampere|A]] SI
aA [[Ampere|A]] SI
zA [[Ampere|A]] SI
yA [[Ampere|A]] SI
```

```
V [[Volt|V]] SI
YV [[Volt|V]] SI
ZV [[Volt|V]] SI
EV [[Volt|V]] SI
PV [[Volt|V]] SI
TV [[Volt|V]] SI
GV [[Volt|V]] SI
MV [[Volt|V]] SI
kV [[Volt|V]] SI
hV [[Volt|V]] SI
daV [[Volt|V]] SI
dV [[Volt|V]] SI
cV [[Volt|V]] SI
mV [[Volt|V]] SI
µV [[Volt|V]] SI
uV [[Volt|V]] SI
nV [[Volt|V]] SI
pV [[Volt|V]] SI
fV [[Volt|V]] SI
```



```

aV [[Volt|V]] SI
zV [[Volt|V]] SI
yV [[Volt|V]] SI

VA [[Volt-ampere|VA]] SI
YVA [[Volt-ampere|VA]] SI
ZVA [[Volt-ampere|VA]] SI
EVA [[Volt-ampere|VA]] SI
PVA [[Volt-ampere|VA]] SI
TVA [[Volt-ampere|VA]] SI
GVA [[Volt-ampere|VA]] SI
MVA [[Volt-ampere|VA]] SI
kVA [[Volt-ampere|VA]] SI
hVA [[Volt-ampere|VA]] SI
daVA [[Volt-ampere|VA]] SI
dVA [[Volt-ampere|VA]] SI
cVA [[Volt-ampere|VA]] SI
mVA [[Volt-ampere|VA]] SI
µVA [[Volt-ampere|VA]] SI
uVA [[Volt-ampere|VA]] SI
nVA [[Volt-ampere|VA]] SI
pVA [[Volt-ampere|VA]] SI
fVA [[Volt-ampere|VA]] SI
aVA [[Volt-ampere|VA]] SI
zVA [[Volt-ampere|VA]] SI
yVA [[Volt-ampere|VA]] SI

Ω [[Ohm|Ω]] SI

YΩ.m [[Electrical resistivity and conductivity#Definition|YΩ&sdot;m]] 1e24
ZΩ.m [[Electrical resistivity and conductivity#Definition|ZΩ&sdot;m]] 1e21
EΩ.m [[Electrical resistivity and conductivity#Definition|EΩ&sdot;m]] 1e18
PΩ.m [[Electrical resistivity and conductivity#Definition|PΩ&sdot;m]] 1e15
TΩ.m [[Electrical resistivity and conductivity#Definition|TΩ&sdot;m]] 1e12
GΩ.m [[Electrical resistivity and conductivity#Definition|GΩ&sdot;m]] 1e9
MΩ.m [[Electrical resistivity and conductivity#Definition|MΩ&sdot;m]] 1e6
kΩ.m [[Electrical resistivity and conductivity#Definition|kΩ&sdot;m]] 1e3
Ω.m [[Electrical resistivity and conductivity#Definition|Ω&sdot;m]] 1
mΩ.m [[Electrical resistivity and conductivity#Definition|mΩ&sdot;m]] 1e-3
µΩ.m [[Electrical resistivity and conductivity#Definition|µΩ&sdot;m]] 1e-6
uΩ.m [[Electrical resistivity and conductivity#Definition|uΩ&sdot;m]] 1e-6
nΩ.m [[Electrical resistivity and conductivity#Definition|nΩ&sdot;m]] 1e-9
pΩ.m [[Electrical resistivity and conductivity#Definition|pΩ&sdot;m]] 1e-12
fΩ.m [[Electrical resistivity and conductivity#Definition|fΩ&sdot;m]] 1e-15
aΩ.m [[Electrical resistivity and conductivity#Definition|aΩ&sdot;m]] 1e-18
zΩ.m [[Electrical resistivity and conductivity#Definition|zΩ&sdot;m]] 1e-21
yΩ.m [[Electrical resistivity and conductivity#Definition|yΩ&sdot;m]] 1e-24

R [[Rayleigh (unit)|R]] SI

G [[Gauss (unit)|G]] SI
aG [[Attogauss|G]] SI
cG [[Centigauss|G]] SI
daG [[Decagauss|G]] SI
dG [[Decigauss|G]] SI
EG [[Exagauss|G]] SI
fG [[Femtogauss|G]] SI
GG [[Gigagauss|G]] SI
hG [[Hectogauss|G]] SI
kG [[Kilogauss|G]] SI
MG [[Megagauss|G]] SI
mG [[Milligauss|G]] SI
uG [[Microgauss|G]] SI
µG [[Microgauss|G]] SI

```



```

nG [[Nanogauss|G]] SI
PG [[Petagauss|G]] SI
pG [[Picogauss|G]] SI
TG [[Teragauss|G]] SI
yG [[Yoctogauss|G]] SI
YG [[Yottagauss|G]] SI
zG [[Zeptogauss|G]] SI
ZG [[Zettagauss|G]] SI

```

```

T [[Tesla (unit)|T]] SI
aT [[Attotesla|T]] SI
cT [[Centitesla|T]] SI
daT [[Decatesla|T]] SI
dT [[Decitesla|T]] SI
ET [[Exatesla|T]] SI
fT [[Femtotesla|T]] SI
GT [[Gigatesla|T]] SI
hT [[Hectotesla|T]] SI
kT [[Kilot Tesla|T]] SI
MT [[Megatesla|T]] SI
mT [[Millitesla|T]] SI
uT [[Microtesla|T]] SI
µT [[Microtesla|T]] SI
nT [[Nanotesla|T]] SI
PT [[Petatesla|T]] SI
pT [[Picotesla|T]] SI
TT [[Teratesla|T]] SI
yT [[Yoctotesla|T]] SI
YT [[Yottatesla|T]] SI
zT [[Zeptotesla|T]] SI
ZT [[Zettatesla|T]] SI

```

== Astrophysics ==

```

au [[Astronomical unit|au]]
c [[Speed of light|'c']]
ly [[Light-year|ly]]
dex [[decimal exponent|dex]]
Earth mass [[Earth mass|'M'<sub></sub>]]
Earth radius [[Earth radius|'R'<sub></sub>]]
M_Earth [[Earth mass|'M'<sub></sub>]]
R_Earth [[Earth radius|'R'<sub></sub>]]
M+ [[Earth mass|'M'<sub></sub>]]
R+ [[Earth radius|'R'<sub></sub>]]
Jupiter mass [[Jupiter mass|'M'<sub>J</sub>]]
Jupiter radius [[Jupiter radius|'R'<sub>J</sub>]]
M_Jupiter [[Jupiter mass|'M'<sub>J</sub>]]
R_Jupiter [[Jupiter radius|'R'<sub>J</sub>]]
Solar mass [[Solar mass|'M'<sub>#x2609;</sub>]]
solar mass [[Solar mass|'M'<sub>#x2609;</sub>]]
M_Solar [[Solar mass|'M'<sub>#x2609;</sub>]]
M_solar [[Solar mass|'M'<sub>#x2609;</sub>]]
R_Solar [[Solar radius|'R'<sub>#x2609;</sub>]]
R_solar [[Solar radius|'R'<sub>#x2609;</sub>]]
Solar radius [[Solar radius|'R'<sub>#x2609;</sub>]]
solar radius [[Solar radius|'R'<sub>#x2609;</sub>]]
Solar luminosity [[Solar luminosity|'L'<sub>#x2609;</sub>]]
solar luminosity [[Solar luminosity|'L'<sub>#x2609;</sub>]]
L_solar [[Solar luminosity|'L'<sub>#x2609;</sub>]]
L_Solar [[Solar luminosity|'L'<sub>#x2609;</sub>]]
Lo [[Solar luminosity|'L'<sub>#x2609;</sub>]]
pc2 [[Parsec|pc<sup>2</sup>]]
pc3 [[Parsec|pc<sup>3</sup>]]
kpc2 [[Parsec#Parsecs and kiloparsecs|kpc<sup>2</sup>]]
kpc3 [[Parsec#Parsecs and kiloparsecs|kpc<sup>3</sup>]]

```



```

kpc [[Parsec#Parsecs and kiloparsecs|kpc]]
Mpc2 [[Parsec#Megaparsecs and gigaparsecs|Mpc<sup>2</sup>]]
Mpc3 [[Parsec#Megaparsecs and gigaparsecs|Mpc<sup>3</sup>]]
Mpc [[Parsec#Megaparsecs and gigaparsecs|Mpc]]
Gpc2 [[Parsec#Megaparsecs and gigaparsecs|Gpc<sup>2</sup>]]
Gpc3 [[Parsec#Megaparsecs and gigaparsecs|Gpc<sup>3</sup>]]
Gpc [[Parsec#Megaparsecs and gigaparsecs|Gpc]]

== Nuclear physics and chemistry ==
cm-1 [[Wavenumber|cm<sup>-1</sup>]]
u [[Unified atomic mass unit|u]]
osmol [[Osmole (unit)|osmol]]
Osm [[Osmole (unit)|Osm]]
M [[Molarity|M]]
TM [[Molarity|M]] SI
GM [[Molarity|M]] SI
MM [[Molarity|M]] SI
kM [[Molarity|M]] SI
hM [[Molarity|M]] SI
daM [[Molarity|M]] SI
dM [[Molarity|M]] SI
cM [[Molarity|M]] SI
mM [[Molarity|M]] SI
uM [[Molarity|M]] 1e-6
nM [[Molarity|M]] SI
pM [[Molarity|M]] SI
kg.mol-1 [[Molar mass|kg&sdot;mol<sup>-1</sup>]]
kg/mol [[Molar mass|kg/mol]]
g.mol-1 [[Molar mass|g&sdot;mol<sup>-1</sup>]]
g/mol [[Molar mass|g/mol]]
eV/c2 [[Electronvolt#Mass|eV/'c''<sup>2</sup>]]
keV/c2 [[Electronvolt#Mass|keV/'c''<sup>2</sup>]]
MeV/c2 [[Electronvolt#Mass|MeV/'c''<sup>2</sup>]]
GeV/c2 [[Electronvolt#Mass|GeV/'c''<sup>2</sup>]]
TeV/c2 [[Electronvolt#Mass|TeV/'c''<sup>2</sup>]]
μN [[Nuclear magneton|μ<span style="display:inline-block;margin-bottom:-0.3em;vertical-align:middle">
μB [[Bohr magneton|μ<span style="display:inline-block;margin-bottom:-0.3em;vertical-align:middle">
eV [[Electronvolt|eV]]
meV [[Electronvolt|meV]]
keV [[Electronvolt|keV]]
MeV [[Electronvolt|MeV]]
GeV [[Electronvolt|GeV]]
TeV [[Electronvolt|TeV]]
mol-1 [[Avogadro constant|mol<sup>-1</sup>]]
J.mol-1 [[Joule per mole|J&sdot;mol<sup>-1</sup>]]
J/mol [[Joule per mole|J/mol]]
kJ.mol-1 [[Joule per mole|kJ&sdot;mol<sup>-1</sup>]]
kJ/mol [[Joule per mole|kJ/mol]]
MJ.mol-1 [[Joule per mole|MJ&sdot;mol<sup>-1</sup>]]
MJ/mol [[Joule per mole|MJ/mol]]
GJ.mol-1 [[Joule per mole|GJ&sdot;mol<sup>-1</sup>]]
GJ/mol [[Joule per mole|GJ/mol]]
TJ.mol-1 [[Joule per mole|TJ&sdot;mol<sup>-1</sup>]]
TJ/mol [[Joule per mole|TJ/mol]]

== Numbers and phrases ==
pp [[Page (paper)|pp]]
ppb [[Parts per billion|ppb]] 1e-9
ppm [[Parts per million|ppm]] 1e-6
billiard [[Orders of magnitude (numbers)#1015|billiard]] 1e15
billion [[1,000,000,000|billion]] 1e9
billionth [[1,000,000,000|billionth]] 1e-9
billionths [[1,000,000,000|billionths]] 1e-9
decilliard [[Orders of magnitude (numbers)#1063|decilliard]] 1e63

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decillion [[Orders of magnitude (numbers)#1033|decillion]] 1e33
decillionth [[Orders of magnitude (numbers)#1033|decillionth]] 1e-33
decillionths [[Orders of magnitude (numbers)#1033|decillionths]] 1e-33
billionard [[1,000,000,000|billionard]] 1e9
million [[Million|million]] 1e6
millionth [[Million|millionth]] 1e-6
millionths [[Million|millionths]] 1e-6
nonilliard [[Orders of magnitude (numbers)#1057|nonilliard]] 1e57
nonillion [[Orders of magnitude (numbers)#1030|nonillion]] 1e30
nonillionth [[Orders of magnitude (numbers)#1030|nonillionth]] 1e-30
nonillionths [[Orders of magnitude (numbers)#1030|nonillionths]] 1e-30
octilliard [[Orders of magnitude (numbers)#1051|octilliard]] 1e51
octillion [[Orders of magnitude (numbers)#1027|octillion]] 1e27
octillionth [[Orders of magnitude (numbers)#1027|octillionth]] 1e-27
octillionths [[Orders of magnitude (numbers)#1027|octillionths]] 1e-27
quadrilliard [[Orders of magnitude (numbers)#1027|quadrilliard]] 1e27
quadrillion [[Orders of magnitude (numbers)#1015|quadrillion]] 1e15
quadrillionth [[Orders of magnitude (numbers)#1015|quadrillionth]] 1e-15
quadrillionths [[Orders of magnitude (numbers)#1015|quadrillionths]] 1e-15
quintilliard [[Orders of magnitude (numbers)#1033|quintilliard]] 1e33
quintillion [[Orders of magnitude (numbers)#1018|quintillion]] 1e18
quintillionth [[Orders of magnitude (numbers)#1018|quintillionth]] 1e-18
quintillionths [[Orders of magnitude (numbers)#1018|quintillionths]] 1e-18
septilliard [[Orders of magnitude (numbers)#1045|septilliard]] 1e45
septillion [[Orders of magnitude (numbers)#1024|septillion]] 1e24
septillionth [[Orders of magnitude (numbers)#1024|septillionth]] 1e-24
septillionths [[Orders of magnitude (numbers)#1024|septillionths]] 1e-24
sextilliard [[Orders of magnitude (numbers)#1039|sextilliard]] 1e39
sextillion [[Orders of magnitude (numbers)#1021|sextillion]] 1e21
sextillionth [[Orders of magnitude (numbers)#1021|sextillionth]] 1e-21
sextillionths [[Orders of magnitude (numbers)#1021|sextillionths]] 1e-21
trilliard [[Orders of magnitude (numbers)#1021|trilliard]] 1e21
trillion [[Orders of magnitude (numbers)#1012|trillion]] 1e12
trillionth [[Orders of magnitude (numbers)#1012|trillionth]] 1e-12
trillionths [[Orders of magnitude (numbers)#1012|trillionths]] 1e-12

```

== Angles ==

%	%	Percent
percent	%	Percent
per cent	%	Percent
‰	‰	Per mil
per mil	‰	Per mil
per mill	‰	Per mil
per mille	‰	Per mil
permil	‰	Per mil
permill	‰	Per mil
permille	‰	Per mil
°	°	Degree (angle)
deg	°	Degree (angle)
'	'	Minute of arc
'	'	Minute of arc
arcmin	'	Minute of arc
arcminute	'	Minute of arc
"	"	Second of arc
"	"	Second of arc
arcsec	"	Second of arc
arcsecond	"	Second of arc
mas	[[Milliarcsecond mas]]	pi/648000000

] = ]

```

-- If val has "|long scale=on" the following definitions are used
-- (then, if not found here, the normal definitions are used).
-- Unit code [[Link|Symbol]] Flags/Scale

```



```
local builtin_units_long_scale = [=[

== Long scale numbers and phrases ==
billion  [[Orders of magnitude (numbers)#1012|billion]]  1e12
billionth  [[Orders of magnitude (numbers)#1012|billionth]]  1e-12
billionths  [[Orders of magnitude (numbers)#1012|billionths]]  1e-12
decillion  [[Orders of magnitude (numbers)#1060|decillion]]  1e60
decillionth  [[Orders of magnitude (numbers)#1060|decillionth]]  1e-60
decillionths  [[Orders of magnitude (numbers)#1060|decillionths]]  1e-60
nonillion  [[Orders of magnitude (numbers)#1054|nonillion]]  1e54
nonillionth  [[Orders of magnitude (numbers)#1054|nonillionth]]  1e-54
nonillionths  [[Orders of magnitude (numbers)#1054|nonillionths]]  1e-54
octillion  [[Orders of magnitude (numbers)#1048|octillion]]  1e48
octillionth  [[Orders of magnitude (numbers)#1048|octillionth]]  1e-48
octillionths  [[Orders of magnitude (numbers)#1048|octillionths]]  1e-48
quadrillion  [[Orders of magnitude (numbers)#1024|quadrillion]]  1e24
quadrillionth  [[Orders of magnitude (numbers)#1024|quadrillionth]]  1e-24
quadrillionths  [[Orders of magnitude (numbers)#1024|quadrillionths]]  1e-24
quintillion  [[Orders of magnitude (numbers)#1030|quintillion]]  1e30
quintillionth  [[Orders of magnitude (numbers)#1030|quintillionth]]  1e-30
quintillionths  [[Orders of magnitude (numbers)#1030|quintillionths]]  1e-30
septillion  [[Orders of magnitude (numbers)#1042|septillion]]  1e42
septillionth  [[Orders of magnitude (numbers)#1042|septillionth]]  1e-42
septillionths  [[Orders of magnitude (numbers)#1042|septillionths]]  1e-42
sextillion  [[Orders of magnitude (numbers)#1036|sextillion]]  1e36
sextillionth  [[Orders of magnitude (numbers)#1036|sextillionth]]  1e-36
sextillionths  [[Orders of magnitude (numbers)#1036|sextillionths]]  1e-36
trillion  [[Orders of magnitude (numbers)#1018|trillion]]  1e18
trillionth  [[Orders of magnitude (numbers)#1018|trillionth]]  1e-18
trillionths  [[Orders of magnitude (numbers)#1018|trillionths]]  1e-18

]=]

return { builtin_units = builtin_units, builtin_units_long_scale = builtin_units_
```