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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 wikitable 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 NOSPACE 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
MB/s  [[Data rate units#Megabyte per second|<span title="Megabytes per second">MB
GB/s  [[Data rate units#Gigabyte per second|<span title="Gigabytes per second">GB
TB/s  [[Data rate units#Terabyte per second|<span title="Terabytes per second">TB
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="Kilotransfers per second">kT/s</span>]]
MT/s  [[Transfer (computing)|<span title="Megatransfers per second">MT/s</span>]]
GT/s  [[Transfer (computing)|<span title="Gigatransfers 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]]  31557600000000000
Ma  [[Megaannum|Ma]]  31557600000000
ka  [[Kiloannum|ka]]  31557600000
kyr  [[kyr|kyr]]  31557600000
kya  [[kyr|kya]]  31557600000
myr  [[myr|myr]]  31557600000000
mya  [[Mya (unit)|mya]]  31557600000000
byr  [[Billion years|byr]]  315576000000000000
bya  [[Billion years ago|bya]]  315576000000000000
Gyr  [[billion years|Gyr]]  315576000000000000
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]]
```

```
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 ==
lbm  [[Pound (mass)|<span title="pound-mass">lb<sub>m</sub></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|µΩ&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  [[Kilotesla|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;ve
μB  [[Bohr magneton|μ<span style="display:inline-block;margin-bottom:-0.3em;verti
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
```

```
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
milliard  [[1,000,000,000|milliard]]  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_
```