

# Tabel Periodik Unsur

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Los Alamos National Laboratory's Chemistry Division  
Periodic Table of the Elements

Gas multi

Group → ↓

1 +1 2 +2 13 +3 14 -3 15 -2 16 -1 18 VIII A 8A

logam nonlogam

Muatan tipikal dari ion pada senyawa biner

Nomor atom




Massa atom

Logam transisi

1	1 H 1.008	2 He 4.003																
2	3 Li 6.941	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
3	11 Na 22.99	12 Mg 24.31	13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95										
4	19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.47	28 Ni 58.69	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.58	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
5	37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
6	55 Cs 132.9	56 Ba 137.3	57 La* 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.9	75 Re 186.2	76 Os 190.2	77 Ir 190.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.5	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po (210)	85 At (210)	86 Rn (222)
7	87 Fr (223)	88 Ra (226)	89 Ac~ (227)	104 Rf (257)	105 Db (260)	106 Sg (263)	107 Bh (262)	108 Hs (265)	109 Mt (266)	110 --- 0	111 --- 0	112 --- 0	114 --- 0					

<http://pearl1.lanl.gov/periodic/default.htm>

## Bentuk fisik pada temperatur kamar

1  gas  cairan  padatan 18

1	2																	18
1	H																	2
2	3	4																10
	Li	Be																Ne
3	11	12	3	4	5	6	7	8	9	10	11	12						18
	Na	Mg																Ar
4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	55	56	*	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
	Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	87	88	**	104	105	106	107	108	109	110	111	112						
	Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt									

\* Lanthanides

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu



\*\* Actinides


89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

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Modified from <http://www.cem.msu.edu/~djm/cem384/ptable.html>

## Unsur alami dan Unsur buatan

1  Unsur alami  Unsur buatan 18

1  Tidak dijumpai di bumi

1	2																	18
1	H																	2
2	3	4																10
	Li	Be																Ne
3	11	12	3	4	5	6	7	8	9	10	11	12						18
	Na	Mg																Ar
4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	55	56	*	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
	Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	87	88	**	104	105	106	107	108	109	110	111	112						
	Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt									

\* Lanthanides

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu

\*\* Actinides

89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

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## Unsur yang penting secara biologi

1	2											13	14	15	16	17	18	
1 H												5 B	6 C	7 N	8 O	9 F	10 Ne	
2	3 Li	4 Be											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
3	11 Na	12 Mg	3	4	5	6	7	8	9	10	11	12	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba	*	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	**	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	111	112						

Kuantitas besar

Kuantitas kelumit

Geoff Rayner-Canham, *Descriptive Inorganic Chemistry*, 2<sup>nd</sup> ed., Freeman (2000)

* Lanthanides	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
** Actinides	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

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Semua unsur lainnya tidak memiliki fungsi bagi sistem biologi.

## Unsur yang diketahui bersifat toksik

1	2											13	14	15	16	17	18	
1 H												5 B	6 C	7 N	8 O	9 F	10 Ne	
2	3 Li	4 Be											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
3	11 Na	12 Mg	3	4	5	6	7	8	9	10	11	12	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba	*	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	**	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	111	112						




Toksik

Geoff Rayner-Canham, *Descriptive Inorganic Chemistry*, 2<sup>nd</sup> ed., Freeman (2000)

* Lanthanides	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
** Actinides	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

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## Molekul di alam dalam bentuk unsur bebas

1  diatomik  tetratomik  octatomik 18

1	2																		18	2
1	H																			2
2	3	4																		10
	Li	Be																		Ne
3	11	12	3	4	5	6	7	8	9	10	11	12								18
	Na	Mg																		Ar
4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		38
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br			Kr
5	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54		54
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I			Xe
6	55	56	*	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86		88
	Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At			Rn
7	87	88	**	104	105	106	107	108	109	110	111	112								
	Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt											


  

* Lanthanides	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
** Actinides	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

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Semua unsur lain adalah monoatomik di alam.

## Semua isotop radioaktif

1  Bentuk isotop tidak stabil 18

1	2																			18
1	H																			2
2	3	4																		10
	Li	Be																		Ne
3	11	12	3	4	5	6	7	8	9	10	11	12								18
	Na	Mg																		Ar
4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		38
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br			Kr
5	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54		54
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I			Xe
6	55	56	*	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86		88
	Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At			Rn
7	87	88	**	104	105	106	107	108	109	110	111	112								
	Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt											

* Lanthanides	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
** Actinides	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

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# Struktur elektronik

**s block** 1 2

**p block** 13 14 15 16 17 18

**d block** 3 4 5 6 7 8 9 10 11 12

**f block** 14 15 16 17 18

**Lanthanides** \* 57 La Ce 58 Pr Nd 59 Pm 60 Sm 61 Eu 62 Gd 63 Tb 64 Dy 65 Ho 66 Er 67 Tm 68 Yb 69 Lu

**Actinides** \*\* 89 Ac Th 90 Pa U 91 Np 92 Pu 93 Am 94 Cm 95 Bk 96 Cf 97 Es 98 Fm 99 Md 100 No 101 Lr

**iqmal block**

# Elektron valensi untuk golongan utama A

**s block** +1  $ns^1$  +2  $ns^2$  **1A** **2A**

**p block** +3 ± 4 -3 -2 -1  $ns^2np^5$   $ns^2np^4$   $ns^2np^3$   $ns^2np^2$   $ns^2np^1$  **3A** **4A** **5A** **6A** **7A** **8A**

Muatan pada ion monoatomik yang stabil

**Group B**

Nomor periode menunjukkan nomor kulit (n)

# Kimia Hidrida (senyawa hidrogen binari)

