

September 2008



# **PLASUS SpecLine**

Version 2.1

## **Content of Database for Version:**

**SpecLine A**

**SpecLine AM**

**SpecLine AMS**

## Atoms in PLASUS SpecLine A, AM and AMS:

The ionisation states are given in spectroscopic notation: 'I' denotes neutrals, 'II' single ionized elements, 'III' double ionized elements, etc..

Z	Element	Symbol	Ionisation state	Z	Element	Symbol	Ionisation state
1	Hydrogen	H, D, T	I	52	Tellurium	Te	I - II
2	Helium	He	I - II	53	Iodine	I	I - V
3	Lithium	Li	I - III	54	Xenon	Xe	I - VIII
4	Beryllium	Be	I - IV	55	Cesium	Cs	I - IV
5	Boron	B	I - V	56	Barium	Ba	I - V
6	Carbon	C	I - V	57	Lanthanum	La	I - V
7	Nitrogen	N	I - VII	58	Cerium	Ce	I - V
8	Oxygen	O	I - VII	59	Praseodymium	Pr	I - V
9	Fluorine	F	I - VIII	60	Neodymium	Nd	I - II
10	Neon	Ne	I - IX	61	Promethium	Pm	I - II
11	Sodium	Na	I - IX	62	Samarium	Sm	I - II
12	Magnesium	Mg	I - XII	63	Europium	Eu	I - III
13	Aluminum	Al	I - XIII	64	Gadolinium	Gd	I - IV
14	Silicon	Si	I - XII	65	Terbium	Tb	I - IV
15	Phosphorus	P	I - XIII	66	Dysprosium	Dy	I - II
16	Sulfur	S	I - XVI	67	Holmium	Ho	I - II
17	Chlorine	Cl	I - X	68	Erbium	Er	I - III
18	Argon	Ar	I - XIV	69	Thulium	Tm	I - III
19	Potassium	K	I - XIV	70	Ytterbium	Yb	I - IV
20	Calcium	Ca	I - XV	71	Lutetium	Lu	I - V
21	Scandium	Sc	I - XXI	72	Hafnium	Hf	I - V
22	Titanium	Ti	I - XXI	73	Tantalum	Ta	I - V
23	Vanadium	V	I - XXII	74	Tungsten	W	I - II
24	Chromium	Cr	I - XXIII	75	Rhenium	Re	I - II
25	Manganese	Mn	I - XXIV	76	Osmium	Os	I - II
26	Iron	Fe	I - XXV	77	Iridium	Ir	I - II
27	Cobalt	Co	I - XXVI	78	Platinum	Pt	I - II
28	Nickel	Ni	I - XXVII	79	Gold	Au	I - III
29	Copper	Cu	I - V	80	Mercury	Hg	I - III
30	Zinc	Zn	I - IV	81	Thallium	Tl	I - IV
31	Gallium	Ga	I - V	82	Lead	Pb	I - V
32	Germanium	Ge	I - V	83	Bismuth	Bi	I - V
33	Arsenic	As	I - V	84	Polonium	Po	I
34	Selenium	Se	I - V	85	Astatine	At	I
35	Bromine	Br	I - V	86	Radon	Rn	I
36	Krypton	Kr	I - VIII	87	Francium	Fr	I
37	Rubidium	Rb	I - IV	88	Radium	Ra	I - II
38	Strontium	Sr	I - V	89	Actinium	Ac	I - IV
39	Yttrium	Y	I - V	90	Thorium	Th	I - IV
40	Zirconium	Zr	I - V	91	Protactinium	Pa	I - II
41	Niob	Nb	I - V	92	Uranium	U	I - II
42	Molybdenum	Mo	I - IV	93	Neptunium	Np	I
43	Technetium	Tc	I - II	94	Plutonium	Pu	I - II
44	Ruthenium	Ru	I - III	95	Americium	Am	I - II
45	Rhodium	Rh	I - III	96	Curium	Cm	I - II
46	Palladium	Pd	I - III	97	Berkelium	Bk	I - II
47	Silver	Ag	I - III	98	Californium	Cf	I - II
48	Cadmium	Cd	I - IV	99	Einsteinium	Es	I - II
49	Indium	In	I - V				
50	Tin	Sn	I - V				
51	Antimon	Sb	I - V				

**Molecules in PLASUS SpecLine AM and AMS:**

Element	Molecules
Silver molecules	Ag <sub>2</sub> , AgCl, AgF, AgH, AgO
Aluminum molecules	Al <sub>2</sub> , AlCl, AlF, AlH, AlH <sup>+</sup> , AlN, AlO, AlS
Arsenic molecules	As <sub>2</sub> , AsCl, AsF, AsH, AsN, AsO, AsO <sup>+</sup> , AsP, AsS, AsS <sup>+</sup>
Gold molecules	Au <sub>2</sub> , AuCl, AuH
Boron molecules	B <sub>2</sub> , BCl, BF, BH, BH <sup>+</sup> , BN, BO, BO <sup>+</sup> , BS
Barium molecules	BaCl, BaF, BaH, BaO, BaS
Beryllium molecules	BeCl, BeF, BeH, BeH <sup>+</sup> , BeO, BeS
Carbon molecules	C <sub>2</sub> , C <sub>2</sub> <sup>+</sup> , C <sub>2</sub> <sup>-</sup> , C <sub>3</sub> , CCl, CF, CF <sub>2</sub> , CH, CH <sup>+</sup> , CH <sub>2</sub> , CH <sub>3</sub> , CN, CN <sup>+</sup> , CN <sub>2</sub> , C <sub>2</sub> N, C <sub>2</sub> N <sub>2</sub> , CO, CO <sup>+</sup> , CO <sub>2</sub> , CO <sub>2</sub> <sup>+</sup> , CP, CS, CS <sub>2</sub> , CS <sub>2</sub> <sup>+</sup>
Calcium molecules	CaCl, CaF, CaH, CaO, CaS
Cadmium molecules	CdCl, CdF, CdH, CdH <sup>+</sup>
Chlorine molecules	Cl <sub>2</sub> , Cl <sub>2</sub> <sup>+</sup> , ClF, ClO
Chromium molecules	CrCl, CrF, CrH, CrO, CrS
Copper molecules	Cu <sub>2</sub> , CuCl, CuF, CuH, CuO, CuS
Fluorine molecules	F <sub>2</sub> , F <sub>2</sub> <sup>+</sup>
Iron molecules	FeCl, FeF, FeO
Gallium molecules	Ga <sub>2</sub> , GaCl, GaF, GaH, GaO
Germanium molecules	GeCl, GeF, GeH, GeO, GeS
Hydrogen molecules	HCN, HCl, HCl <sup>+</sup> , HF, HF <sup>+</sup> , H <sub>2</sub> O, H <sub>2</sub> O <sup>+</sup>
Helium molecules	He <sub>2</sub> , HeNe
Mercury molecules	Hg <sub>2</sub> , Hg <sub>2</sub> <sup>+</sup> , HgCl, HgF, HgH, HgH <sup>+</sup>
Indium molecules	In <sub>2</sub> , InCl, InF, InH, InO, InO <sup>+</sup>
Potassium molecules	K <sub>2</sub>
Lithium molecules	Li <sub>2</sub> , LiCl, LiH
Magnesium molecules	Mg <sub>2</sub> , MgCl, MgF, MgH, MgH <sup>+</sup> , MgO, MgS
Nitrogen molecules	N <sub>2</sub> , N <sub>2</sub> <sup>+</sup> , NCl, NF, NH, NH <sup>+</sup> , NH <sub>2</sub> , NO, NO <sub>2</sub> , N <sub>2</sub> O, N <sub>2</sub> O <sup>+</sup> , NS, NS <sup>+</sup>
Sodium molecules	Na <sub>2</sub> , NaF, NaH, NaK
Neon molecules	Ne <sub>2</sub>
Nickel molecules	NiCl, NiF, NiH, NiO
Oxygen molecules	O <sub>2</sub> , O <sub>2</sub> <sup>+</sup> , O <sub>3</sub> , OH, OH <sup>+</sup>
Phosphorus molecules	P <sub>2</sub> , P <sub>2</sub> <sup>+</sup> , PCl, PF, PF <sup>+</sup> , PH, PH <sup>+</sup> , PN, PO, PO <sup>+</sup> , PS, PS <sup>+</sup>
Platinum molecules	PtC, PtH, PtO
Sulfur molecules	S <sub>2</sub> , SF, SH, SH <sup>+</sup> , SO, SO <sub>2</sub> , S <sub>2</sub> O
Selenic molecules	Se <sub>2</sub> , SeCl, SeH, SeO, SeS
Silicon molecules	Si <sub>2</sub> , SiC <sub>2</sub> , SiCl, SiF, SiH, SiH <sup>+</sup> , SiH <sub>2</sub> , SiN, SiO, SiO <sup>+</sup> , SiO <sub>2</sub> , SiS
Tin molecules	SnCl, SnF, SnH, SnO, SnS
Strontium molecules	SrCl, SrF, SrH, SrO
Tantalum molecules	TaO, TaO <sup>+</sup>
Titanium molecules	TiCl, TiF, TiH, TiN, TiO, TiS
Vanadium molecules	VCl, VH, VO
Tungsten molecules	WO
Zinc molecules	Zn <sub>2</sub> , ZnCl, ZnF, ZnH, ZnH <sup>+</sup> , ZnO

**Additional molecules in PLASUS SpecLine AMS:**

Element	Molecules
Silver molecules	AgBr
Aluminum molecules	AlBr
Arsenic molecules	AsH <sub>2</sub>
Boron molecules	BBr, BO <sub>2</sub> , BOF <sub>2</sub>
Bromine molecules ecules	Br <sub>2</sub> , Br <sub>2</sub> <sup>+</sup> , BrCl, BrF, BrO
Carbon molecules	CBr, CHCl, CHF, CHNO, CHNS, CHO, CHOCHO, CHOF, CHOOH, CH <sub>2</sub> O, CH <sub>2</sub> CHCHO, CH <sub>3</sub> Br, CH <sub>3</sub> Cl, CH <sub>3</sub> NO <sub>2</sub> , CH <sub>3</sub> O, C <sub>2</sub> H <sub>2</sub> , C <sub>2</sub> H <sub>4</sub> , C <sub>2</sub> H <sub>4</sub> O, C <sub>2</sub> H <sub>5</sub> , C <sub>2</sub> H <sub>5</sub> CHO, C <sub>2</sub> H <sub>5</sub> NO <sub>2</sub> , C <sub>3</sub> H <sub>3</sub> , C <sub>3</sub> H <sub>5</sub> , C <sub>3</sub> H <sub>6</sub> O, C <sub>4</sub> H <sub>2</sub> , C <sub>4</sub> H <sub>2</sub> <sup>+</sup> , C <sub>5</sub> H <sub>5</sub> , C <sub>6</sub> H <sub>5</sub> , C <sub>6</sub> H <sub>5</sub> Cl, C <sub>6</sub> H <sub>5</sub> F, C <sub>6</sub> H <sub>5</sub> CHO, C <sub>6</sub> H <sub>5</sub> OH, C <sub>6</sub> H <sub>6</sub> , C <sub>7</sub> H <sub>7</sub> , C <sub>10</sub> H <sub>8</sub> , CF <sub>3</sub> NO, C <sub>3</sub> F <sub>7</sub> NO <sub>2</sub> , C <sub>3</sub> F <sub>7</sub> NO, CF <sub>3</sub> NO <sub>2</sub> , COCl <sub>2</sub> , C <sub>2</sub> O, C <sub>3</sub> O <sub>2</sub> , COS, COS <sup>+</sup> , C <sub>3</sub> S <sub>2</sub>
Calcium molecules	CaBr, CaOH
Cadmium molecules	CdBr
Cerium molecules	CeO
Chlorine molecules	ClF <sub>3</sub> , ClO <sub>2</sub>
Chromium molecules	CrBr
Copper molecules	CuBr, CuOH
Fluorine molecules	FCO, F <sub>2</sub> CO
Iron molecules	FeBr
Gallium molecules	GaBr
Germanium molecules	GeBr
Hydrogen molecules	H <sub>2</sub> , HBr, HBr <sup>+</sup> , HCP, HNF, HNO, HNO <sub>2</sub> , HS <sub>2</sub> , H <sub>2</sub> S, H <sub>2</sub> S <sup>+</sup>
Mercury molecules	HgBr, HgBr <sub>2</sub> , HgCl <sub>2</sub>
Indium molecules	InBr, InBr <sub>2</sub> , InCl <sub>2</sub>
Lithium molecules	LiBr
Magnesium molecules	MgBr, MgOH
Nitrogen molecules	N <sub>3</sub> , NCO, NCS, NCl <sub>2</sub> , NF <sub>2</sub> , NH <sub>3</sub> , N <sub>2</sub> H <sub>2</sub> , N <sub>2</sub> H <sub>4</sub> , NO <sub>3</sub> , N <sub>2</sub> O <sub>3</sub> , N <sub>2</sub> O <sub>4</sub> , N <sub>2</sub> O <sub>5</sub> , NSF
Nickel molecules	NiBr
Phosphorus molecules	PH <sub>2</sub> , PH <sub>3</sub> , PHO, POBr, POBr <sub>2</sub> , POCl, POCl <sub>2</sub>
Sulfur molecules	S <sub>3</sub> , S <sub>4</sub> , SO <sub>3</sub>
Selenic molecules	SeBr, SeBr <sub>2</sub> , SeCl <sub>2</sub> , SeO <sub>2</sub>
Silicon molecules	SiBr, SiBr <sup>+</sup> , SiHBr, SiCl <sub>2</sub> , SiHCl, SiF <sub>2</sub> , SiF <sub>3</sub> , SiH
Tin molecules	SnBr
Strontium molecules	SrBr, SrOH
Titanium molecules	TiBr
Zinc molecules	ZnBr

PLASUS, September 2008. Specifications are subject to change without notice.