

Space Group

1 one-dimensional space group

symmorphic	
No.	H-M
1	$\mathcal{P}1$
2	$\mathcal{P}\bar{1}$

2 two-dimensional space group

system	symmorphic		nonsymmorphic			
	No.	H-M	No.	H-M	No.	H-M
oblique	1	$p1$				
	2	$p2$				
rectangular	3	pm	4	pg		
	5	cm				
	6	$p2mm$	7	$p2mg$	8	$p2gg$
	9	$c2mm$				
square	10	$p4$				
	11	$p4mm$	12	$p4gm$		
hexagonal	13	$p3$				
	14	$p3m1$				
	15	$p31m$				
	16	$p6$				
	17	$p6mm$				

system	point group	Bravais lattice	direction	symmorphic	nonsymmorphic	sum
	n_i	p_i	k_i	$n_i p_i + k_i$		
oblique	2	1	0	2	0	2
rectangular	2	2	0	4	3	7
square	2	1	0	2	1	3
hexagonal	4	1	1	5	0	5
sum	10	5	1	13	4	17

3 three-dimensional space group

3.1 triclinic

symmorphic			nonsymmorphic		
No.	S	H-M	No.	S	H-M
1	C_1^1	$P1$			
2	C_i^1	$P\bar{1}$			

3.2 monoclinic

symmorphic			nonsymmorphic								
No.	S	H-M	No.	S	H-M	No.	S	H-M	No.	S	H-M
3	C_2^1	$P2$	4	C_2^2	$P2_1$						
5	C_2^3	$C2$									
6	C_s^1	Pm	7	C_s^2	Pc						
8	C_s^3	Cm	9	C_s^4	Cc						
10	C_{2h}^1	$P2/m$	11	C_{2h}^2	$P2_1/m$	13	C_{2h}^4	$P2/c$	14	C_{2h}^5	$P2_1/c$
12	C_{2h}^3	$C2/m$	15	C_{2h}^6	$C2/c$						

3.3 orthorhombic

symmorphic			nonsymmorphic								
No.	S	H-M	No.	S	H-M	No.	S	H-M	No.	S	H-M
16	D_2^1	$P222$	17	D_2^2	$P222_1$	18	D_2^3	$P2_12_12$	19	D_2^4	$P2_12_12_1$
21	D_2^6	$C222$	20	D_2^5	$C222_1$						
22	D_2^7	$F222$									
23	D_2^8	$I222$	24	D_2^9	$I2_12_12_1$						
25	C_{2v}^1	$Pmm2$	26	C_{2v}^2	$Pmc2_1$	27	C_{2v}^3	$Pcc2$	28	C_{2v}^4	$Pma2$
			29	C_{2v}^5	$Pca2_1$	30	C_{2v}^6	$Pnc2$	31	C_{2v}^7	$Pmn2_1$
			32	C_{2v}^8	$Pba2$	33	C_{2v}^9	$Pna2_1$	34	C_{2v}^{10}	$Pnn2$
35	C_{2v}^{11}	$Cmm2$	36	C_{2v}^{12}	$Cmc2_1$	37	C_{2v}^{13}	$Ccc2$			
38	C_{2v}^{14}	$Amm2$	39	C_{2v}^{15}	$Aem2$	40	C_{2v}^{16}	$Ama2$	41	C_{2v}^{17}	$Aea2$
42	C_{2v}^{18}	$Fmm2$	43	C_{2v}^{19}	$Fdd2$						
44	C_{2v}^{20}	$Imm2$	45	C_{2v}^{21}	$Iba2$	46	C_{2v}^{22}	$Ima2$			
47	D_{2h}^1	$Pmmm$	48	D_{2h}^2	$Pnnn$	49	D_{2h}^3	$Pccm$	50	D_{2h}^4	$Pban$
			51	D_{2h}^5	$Pmma$	52	D_{2h}^6	$Pnna$	53	D_{2h}^7	$Pmna$
			54	D_{2h}^8	$Pcca$	55	D_{2h}^9	$Pbam$	56	D_{2h}^{10}	$Pccn$
			57	D_{2h}^{11}	$Pbcm$	58	D_{2h}^{12}	$Pnmm$	59	D_{2h}^{13}	$Pmnm$
			60	D_{2h}^{14}	$Pbcn$	61	D_{2h}^{15}	$Pbca$	62	D_{2h}^{16}	$Pnma$
65	D_{2h}^{19}	$Cmmm$	66	D_{2h}^{20}	$Cccm$	67	D_{2h}^{21}	$Cmme$	68	D_{2h}^{22}	$Ccce$
			63	D_{2h}^{17}	$Cmcm$	64	D_{2h}^{18}	$Cmce$			
69	D_{2h}^{23}	$Fmmm$	70	D_{2h}^{24}	$Fddd$						
71	D_{2h}^{25}	$Immm$	72	D_{2h}^{26}	$Ibam$	73	D_{2h}^{27}	$Ibca$	74	D_{2h}^{28}	$Imma$

3.4 tetragonal

symmorphic			nonsymmorphic								
No.	S	H-M	No.	S	H-M	No.	S	H-M	No.	S	H-M
75	C_4^1	$P4$	76	C_4^2	$P4_1$	77	C_4^3	$P4_2$	78	C_4^4	$P4_3$
79	C_4^5	$I4$	80	C_4^6	$I4_1$						
81	S_4^1	$P4$									
82	S_4^2	$I4$									
83	C_{4h}^1	$P4/m$	84	C_{4h}^2	$P4_2/m$	85	C_{4h}^3	$P4/n$	86	C_{4h}^4	$P4_2/n$
87	C_{4h}^5	$I4/m$	88	C_{4h}^6	$I4_1/a$						
89	D_4^1	$P422$	90	D_4^2	$P42_12$	91	D_4^3	$P4_122$	92	D_4^4	$P4_12_12$
			93	D_4^5	$P4222$	94	D_4^6	$P4_22_12$	95	D_4^7	$P4_322$
			96	D_4^8	$P4_32_12$						
97	D_4^9	$I422$	98	D_4^{10}	$I4_122$						
99	C_{4v}^1	$P4mm$	100	C_{4v}^2	$P4bm$	101	C_{4v}^3	$P4_2cm$	102	C_{4v}^4	$P4_2nm$
			103	C_{4v}^5	$P4cc$	104	C_{4v}^6	$P4nc$	105	C_{4v}^7	$P4_2mc$
			106	C_{4v}^8	$P4_2bc$						
107	C_{4v}^9	$I4mm$	108	C_{4v}^{10}	$I4cm$	109	C_{4v}^{11}	$I4_1md$	110	C_{4v}^{12}	$I4_1cd$
111	D_{2d}^1	$P42m$	112	D_{2d}^2	$P42c$	113	D_{2d}^3	$P4_21m$	114	D_{2d}^4	$P4_21c$
115	D_{2d}^5	$P4m2$	116	D_{2d}^6	$P4c2$	117	D_{2d}^7	$P4b2$	118	D_{2d}^8	$P4n2$
119	D_{2d}^9	$I4m2$	120	D_{2d}^{10}	$I4c2$						
121	D_{2d}^{11}	$I42m$	122	D_{2d}^{12}	$I4_2d$						
123	D_{4h}^1	$P4/mmm$	124	D_{4h}^2	$P4/mcc$	125	D_{4h}^3	$P4/nbm$	126	D_{4h}^4	$P4/nnc$
			127	D_{4h}^5	$P4/mbm$	128	D_{4h}^6	$P4/mnc$	129	D_{4h}^7	$P4/nmm$
			130	D_{4h}^8	$P4/ncc$	131	D_{4h}^9	$P4_2/mmc$	132	D_{4h}^{10}	$P4_2/mcm$
			133	D_{4h}^{11}	$P4_2/nbc$	134	D_{4h}^{12}	$P4_2/nnm$	135	D_{4h}^{13}	$P4_2/mbc$
			136	D_{4h}^{14}	$P4_2/mnm$	137	D_{4h}^{15}	$P4_2/nmc$	138	D_{4h}^{16}	$P4_2/nem$
139	D_{4h}^{17}	$I4/mmm$	140	D_{4h}^{18}	$I4/mcm$	141	D_{4h}^{19}	$I4_1/amd$	142	D_{4h}^{20}	$I4_1/acd$

3.5 trigonal

symmorphic			nonsymmorphic					
No.	S	H-M	No.	S	H-M	No.	S	H-M
143	C_3^1	$P3$	144	C_3^2	$P3_1$	145	C_3^3	$P3_2$
146	C_3^4	$R3$						
147	C_{3i}^1	$P\bar{3}$						
148	C_{3i}^2	$R\bar{3}$						
149	D_3^1	$P312$	151	D_3^3	$P3_112$	153	D_3^5	$P3_212$
150	D_3^2	$P321$	152	D_3^4	$P3_121$	154	D_3^6	$P3_221$
155	D_3^7	$R32$						
156	C_{3v}^1	$P3m1$	158	C_{3v}^3	$P3c1$			
157	C_{3v}^2	$P31m$	159	C_{3v}^4	$P31c$			
160	C_{3v}^5	$R3m$	161	C_{3v}^6	$R3c$			
162	D_{3d}^1	$P31m$	163	D_{3d}^2	$P31c$			
164	D_{3d}^3	$P\bar{3}m1$	165	D_{3d}^4	$P\bar{3}c1$			
166	D_{3d}^5	$R\bar{3}m$	167	D_{3d}^6	$R\bar{3}c$			

3.6 hexagonal

symmorphic			nonsymmorphic								
No.	S	H-M	No.	S	H-M	No.	S	H-M	No.	S	H-M
168	C_6^1	$P6$	169	C_6^2	$P6_1$	170	C_6^3	$P6_5$	171	C_6^4	$P6_2$
			172	C_6^5	$P6_4$	173	C_6^6	$P6_3$			
174	C_{3h}^1	$P\bar{6}$									
175	C_{6h}^1	$P6/m$	176	C_{6h}^2	$P6_3/m$						
177	D_6^1	$P622$	178	D_6^2	$P6_122$	179	D_6^3	$P6_522$	180	D_6^4	$P6_222$
			181	D_6^5	$P6_422$	182	D_6^6	$P6_322$			
183	C_{6v}^1	$P6mm$	184	C_{6v}^2	$P6cc$	185	C_{6v}^3	$P6_3cm$	186	C_{6v}^4	$P6_3mc$
187	D_{3h}^1	$P\bar{6}m2$	188	D_{3h}^2	$P\bar{6}c2$						
189	D_{3h}^3	$P\bar{6}2m$	190	D_{3h}^4	$P\bar{6}2c$						
191	D_{6h}^1	$P6/mmm$	192	D_{6h}^2	$P6/mcc$	193	D_{6h}^3	$P6_3/mcm$	194	D_{6h}^4	$P6_3/mmc$

3.7 cubic

symmorphic			nonsymmorphic								
No.	S	H-M	No.	S	H-M	No.	S	H-M	No.	S	H-M
195	T^1	$P23$	198	T^4	$P2_13$						
196	T^2	$F23$									
197	T^3	$I23$	199	T^5	$I2_13$						
200	T_h^1	$Pm\bar{3}$	205	T_h^6	$Pa\bar{3}$	201	T_h^2	$Pn\bar{3}$			
202	T_h^3	$Fm\bar{3}$	203	T_h^4	$Fd\bar{3}$						
204	T_h^5	$Im\bar{3}$	206	T_h^7	$Ia\bar{3}$						
207	O^1	$P432$	208	O^2	$P4_232$	212	O^6	$P4_332$	213	O^7	$P4_132$
209	O^3	$F432$	210	O^4	$F4_132$						
211	O^5	$I432$	214	O^8	$I4_132$						
215	T_d^1	$P\bar{4}3m$	218	T_d^4	$P\bar{4}3n$						
216	T_d^2	$F\bar{4}3m$	219	T_d^5	$F\bar{4}3c$						
217	T_d^3	$I\bar{4}3m$	220	T_d^6	$I\bar{4}3d$						
221	O_h^1	$Pm\bar{3}m$	222	O_h^2	$Pn\bar{3}n$	223	O_h^3	$Pm\bar{3}n$	224	O_h^4	$Pn\bar{3}m$
225	O_h^5	$Fm\bar{3}m$	226	O_h^6	$Fm\bar{3}c$	227	O_h^7	$Fd\bar{3}m$	228	O_h^8	$Fd\bar{3}c$
229	O_h^9	$Im\bar{3}m$	230	O_h^{10}	$Ia\bar{3}d$						

3.8 number of groups

system	point group n_i	Bravais lattice p_i	direction k_i	symmorphic $n_i p_i + k_i$	nonsymmorphic	sum
triclinic	2	1	0	2	0	2
monoclinic	3	2	0	6	7	13
orthorhombic	3	4	1	13	46	59
tetragonal	7	2	2	16	52	68
trigonal	5	2	3	13	12	25
hexagonal	7	1	1	8	19	27
cubic	5	3	0	15	21	36
sum	32	15	7	73	157	230