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3.2.3. Tables of the crystallographic point-group types

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The crystallographic point-group types are listed in Tables 3.2.3.1 and 3.2.3.2 for two-dimensional and for three-dimensional space, respectively. No listings are presented for the noncrystallographic point-group types (*i.e.* having axes of orders other than 1, 2, 3, 4 and 6), but their symbols can be found in Tables 3.2.1.5, 3.2.1.6 and 3.2.3.3 (*cf.* Section 3.2.1.4 for a review of noncrystallographic point groups). The two icosahedral point groups 235 and $m\bar{3}\bar{5}$ are treated in detail in Section 3.2.1.4.2, while their crystallographic data are shown in Table 3.2.3.3.

There is a physical difference between the point groups of crystals and those of molecules. For a molecule, the point group is the set of all symmetry operations that map its atoms onto one another. Macroscopic crystals, however, hardly ever exhibit their ideal symmetry because of the defects that occur during crystal growth. For a crystal, its point group is the set of all symmetry operations that map the set of the vectors normal to the crystal faces onto one another; it does not operate in point space, but in vector space.

In Tables 3.2.3.1 and 3.2.3.2 the point-group types are presented for crystals as well as for molecules. However, parts of the tables concern either crystals only or molecules only. The names of crystal forms in the fifth column (in roman type) and the *hkl* face indices in the last column are only relevant for crystals. The names of the point forms in the second line of each pair of entries in the fifth column (given in italics) and the other data (multiplicities, Wyckoff letters, site symmetries and sets of symmetry-equivalent coordinates) concern both crystals and molecules. However, for point groups with an origin fixed by symmetry, the Wyckoff position with the Wyckoff letter *o* is only of interest for molecules.

Because the meanings of the entries are not identical for crystals and for molecules, they are not explained here, but in Sections 3.2.1 (for crystals) and 3.2.4 (for molecules).

(*continued on page* 772)

Table 3.2.3.1
The ten two-dimensional crystallographic point groups

The point groups are listed in blocks according to crystal system and are specified by their Hermann–Mauguin symbols. For each point group, the stereographic projections show (on the left) the general position and (on the right) the symmetry elements.
The list of Wyckoff positions includes:
Columns 1 to 4: multiplicity, Wyckoff letter, oriented site-symmetry symbol, coordinate doublets;
Under the stereographic projections: edge forms (in roman type) and point forms (in italics); if there are two entries, the second entry refers to a limiting (noncharacteristic) form;
Last column: Miller indices of equivalent edges [for hexagonal groups, Bravais–Miller indices (*hki*) are used].

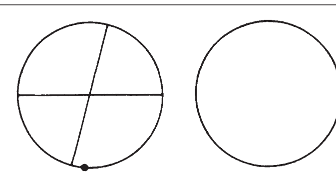
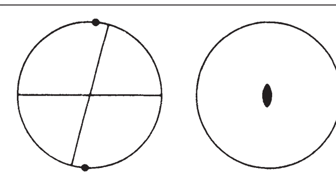
OBLIQUE SYSTEM					
1					
1	*a*	1	x, y	Single edge *Single point*	(*hk*)
2					
2	*a*	1	$x, y \quad \bar{x}, \bar{y}$	Pair of parallel edges *Line segment through origin*	(*hk*) $(\bar{h}\bar{k})$
1	*o*	2	0, 0	*Point in origin*	

Table 3.2.3.1 (continued)

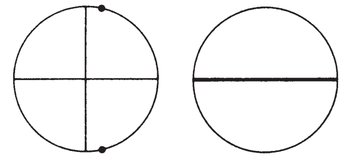
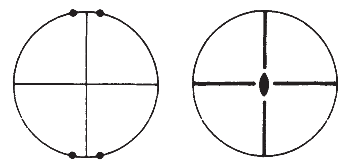
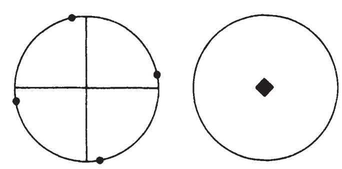
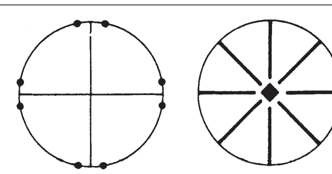
RECTANGULAR SYSTEM					
m					
2	*b*	1	x, y $\bar{x}, y$	Pair of edges *Line segment*	(hk) $(\bar{h}k)$
				Pair of parallel edges *Line segment through origin*	(10) $(\bar{1}0)$
1	*a*	*.m.*	$0, y$	Single edge *Single point*	(01) or $(0\bar{1})$
2mm					
4	*c*	1	x, y $\bar{x}, \bar{y}$ $\bar{x}, y$ $x, \bar{y}$	Rhomb *Rectangle*	(hk) $(\bar{h}\bar{k})$ $(\bar{h}k)$ $(h\bar{k})$
2	*b*	*.m.*	$0, y$ $0, \bar{y}$	Pair of parallel edges *Line segment through origin*	(01) $(0\bar{1})$
2	*a*	*..m*	$x, 0$ $\bar{x}, 0$	Pair of parallel edges *Line segment through origin*	(10) $(\bar{1}0)$
1	*o*	2*mm*	$0, 0$	*Point in origin*	
SQUARE SYSTEM					
4					
4	*a*	1	x, y $\bar{x}, \bar{y}$ $\bar{y}, x$ $y, \bar{x}$	Square *Square*	(hk) $(\bar{h}\bar{k})$ $(\bar{k}h)$ $(k\bar{h})$
1	*o*	4..	$0, 0$	*Point in origin*	
4*mm*					
8	*c*	1	x, y $\bar{x}, \bar{y}$ $\bar{y}, x$ $y, \bar{x}$ $\bar{x}, y$ $x, \bar{y}$ y, x $\bar{y}, \bar{x}$	Ditetragon *Truncated square*	(hk) $(\bar{h}\bar{k})$ $(\bar{k}h)$ $(k\bar{h})$ $(\bar{h}k)$ $(h\bar{k})$ (kh) $(\bar{k}\bar{h})$
4	*b*	*..m*	x, x $\bar{x}, \bar{x}$ $\bar{x}, x$ $x, \bar{x}$	Square *Square*	(11) $(\bar{1}\bar{1})$ $(\bar{1}1)$ $(1\bar{1})$
4	*a*	*.m.*	$x, 0$ $\bar{x}, 0$ $0, x$ $0, \bar{x}$	Square *Square*	(10) $(\bar{1}0)$ (01) $(0\bar{1})$
1	*o*	4*mm*	$0, 0$	*Point in origin*	

Table 3.2.3.1 (continued)

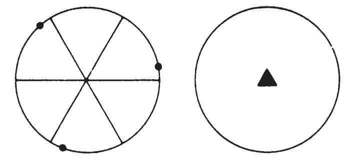
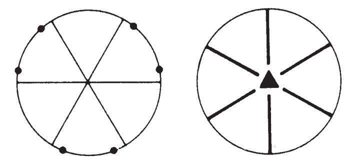
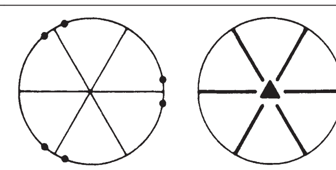
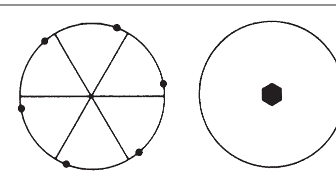
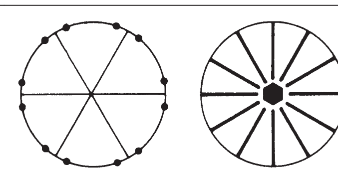
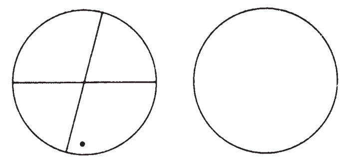
HEXAGONAL SYSTEM					
3					
3	*a*	1	$x, y \quad \bar{y}, x-y \quad \bar{x}+y, \bar{x}$	Trigon *Trigon*	(hki) (ihk) (kih)
1	*o*	3..	0, 0	*Point in origin*	
3*m*1					
6	*b*	1	$x, y \quad \bar{y}, x-y \quad \bar{x}+y, \bar{x}$ $\bar{y}, \bar{x} \quad \bar{x}+y, y \quad x, x-y$	Ditrigon *Truncated trigon*	(hki) (ihk) (kih) $(\bar{k}\bar{h}\bar{i})$ $(\bar{i}\bar{k}\bar{h})$ $(\bar{h}\bar{i}\bar{k})$
				Hexagon *Hexagon*	$(11\bar{2})$ $(\bar{2}11)$ $(1\bar{2}1)$ $(\bar{1}\bar{1}2)$ $(2\bar{1}\bar{1})$ $(\bar{1}2\bar{1})$
3	*a*	*.m.*	$x, \bar{x} \quad x, 2x \quad 2\bar{x}, \bar{x}$	Trigon *Trigon*	$(10\bar{1})$ $(\bar{1}10)$ $(0\bar{1}1)$ or $(\bar{1}01)$ $(1\bar{1}0)$ $(01\bar{1})$
1	*o*	3*m*.	0, 0	*Point in origin*	
31*m*					
6	*b*	1	$x, y \quad \bar{y}, x-y \quad \bar{x}+y, \bar{x}$ $y, x \quad x-y, \bar{y} \quad \bar{x}, \bar{x}+y$	Ditrigon *Truncated trigon*	(hki) (ihk) (kih) (khi) (ikh) (hik)
				Hexagon *Hexagon*	$(10\bar{1})$ $(\bar{1}10)$ $(0\bar{1}1)$ $(01\bar{1})$ $(\bar{1}01)$ $(1\bar{1}0)$
3	*a*	*..m*	$x, 0 \quad 0, x \quad \bar{x}, \bar{x}$	Trigon *Trigon*	$(11\bar{2})$ $(\bar{2}11)$ $(1\bar{2}1)$ or $(\bar{1}\bar{1}2)$ $(2\bar{1}\bar{1})$ $(\bar{1}2\bar{1})$
1	*o*	3.*m*	0, 0	*Point in origin*	
6					
6	*a*	1	$x, y \quad \bar{y}, x-y \quad \bar{x}+y, \bar{x}$ $\bar{x}, \bar{y} \quad y, \bar{x}+y \quad x-y, x$	Hexagon *Hexagon*	(hki) (ihk) (kih) $(\bar{h}\bar{k}\bar{i})$ $(\bar{i}\bar{h}\bar{k})$ $(\bar{k}\bar{i}\bar{h})$
1	*o*	6..	0, 0	*Point in origin*	
6*mm*					
12	*c*	1	$x, y \quad \bar{y}, x-y \quad \bar{x}+y, \bar{x}$ $\bar{x}, \bar{y} \quad y, \bar{x}+y \quad x-y, x$ $\bar{y}, \bar{x} \quad \bar{x}+y, y \quad x, x-y$ $y, x \quad x-y, \bar{y} \quad \bar{x}, \bar{x}+y$	Dihexagon *Truncated hexagon*	(hki) (ihk) (kih) $(\bar{h}\bar{k}\bar{i})$ $(\bar{i}\bar{h}\bar{k})$ $(\bar{k}\bar{i}\bar{h})$ $(\bar{k}\bar{h}\bar{i})$ $(\bar{i}\bar{k}\bar{h})$ $(\bar{h}\bar{i}\bar{k})$ (khi) (ikh) (hik)
6	*b*	*.m.*	$x, \bar{x} \quad x, 2x \quad 2\bar{x}, \bar{x}$ $\bar{x}, x \quad \bar{x}, 2\bar{x} \quad 2x, x$	Hexagon *Hexagon*	$(10\bar{1})$ $(\bar{1}10)$ $(0\bar{1}1)$ $(\bar{1}01)$ $(1\bar{1}0)$ $(01\bar{1})$
6	*a*	*..m*	$x, 0 \quad 0, x \quad \bar{x}, \bar{x}$ $\bar{x}, 0 \quad 0, \bar{x} \quad x, x$	Hexagon *Hexagon*	$(11\bar{2})$ $(\bar{2}11)$ $(1\bar{2}1)$ $(\bar{1}\bar{1}2)$ $(2\bar{1}\bar{1})$ $(\bar{1}2\bar{1})$
1	*o*	6*mm*	0, 0	*Point in origin*	

Table 3.2.3.2
The 32 three-dimensional crystallographic point groups

The point groups are listed in blocks according to crystal system and are specified by their short and (if different) full Hermann–Mauguin symbols and their Schoenflies symbols. For each point group, the stereographic projections show (on the left) the general position and (on the right) the symmetry elements.
The list of Wyckoff positions includes:
Columns 1 to 4: multiplicity, Wyckoff letter, oriented site-symmetry symbol, coordinate triplets;
Under the stereographic projections: face forms (in roman type) and point forms (in italics); if there is more than one entry, subsequent entries refer to limiting (noncharacteristic) forms;
Last column: Miller indices of equivalent faces [for trigonal and hexagonal groups, Bravais–Miller indices (*hkil*) are used if referred to hexagonal axes].

TRICLINIC SYSTEM

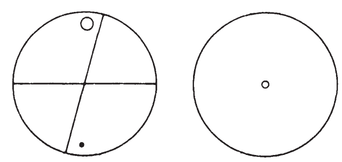
1 C_1



1	*a*	1	x, y, z	Pedion or monohedron *Single point*	(*hkl*)

Symmetry of special projections
Along any direction
1

$\bar{1}$ C_i

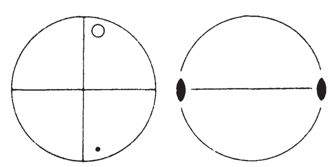


2	*a*	1	x, y, z $\bar{x}, \bar{y}, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(*hkl*) ($\bar{h}\bar{k}\bar{l}$)
1	*o*	$\bar{1}$	0, 0, 0	*Point in origin*	

Symmetry of special projections
Along any direction
2

MONOCLINIC SYSTEM

2 C_2
UNIQUE AXIS *b*

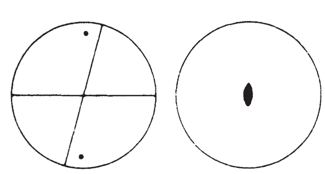


2	*b*	1	x, y, z $\bar{x}, y, \bar{z}$	Sphenoid or dihedron *Line segment*	(*hkl*) ($\bar{h}k\bar{l}$)
				Pinacoid or parallelohedron *Line segment through origin*	(*h*0*l*) ($\bar{h}0\bar{l}$)
1	*a*	2	0, *y*, 0	Pedion or monohedron *Single point*	(010) or (0$\bar{1}$0)

Symmetry of special projections

Along [100]	Along [010]	Along [001]
m	2	*m*

2 C_2
UNIQUE AXIS *c*



2	*b*	1	x, y, z $\bar{x}, \bar{y}, z$	Sphenoid or dihedron *Line segment*	(*hkl*) ($\bar{h}\bar{k}l$)
				Pinacoid or parallelohedron *Line segment through origin*	(*hk*0) ($\bar{h}\bar{k}0$)
1	*a*	2	0, 0, *z*	Pedion or monohedron *Single point*	(001) or (00$\bar{1}$)

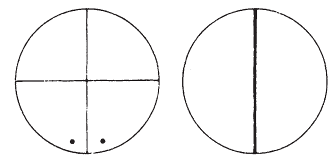
Symmetry of special projections

Along [100]	Along [010]	Along [001]
m	*m*	2

Table 3.2.3.2 (continued)

MONOCLINIC SYSTEM (*cont.*)

m C_s
UNIQUE AXIS *b*

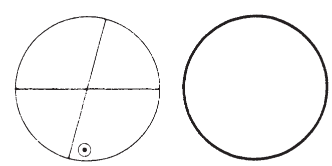


2	*b*	1	x, y, z $x, \bar{y}, z$	Dome or dihedron *Line segment*	(hkl) $(h\bar{k}l)$
				Pinacoid or parallelohedron *Line segment through origin*	(010) $(0\bar{1}0)$
1	*a*	*m*	$x, 0, z$	Pedion or monohedron *Single point*	$(h0l)$

Symmetry of special projections

Along [100]	Along [010]	Along [001]
m	1	*m*

m C_s
UNIQUE AXIS *c*

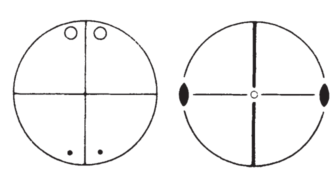


2	*b*	1	x, y, z $x, y, \bar{z}$	Dome or dihedron *Line segment*	(hkl) $(hk\bar{l})$
				Pinacoid or parallelohedron *Line segment through origin*	(001) $(00\bar{1})$
1	*a*	*m*	$x, y, 0$	Pedion or monohedron *Single point*	$(hk0)$

Symmetry of special projections

Along [100]	Along [010]	Along [001]
m	*m*	1

2/*m* C_{2h}
UNIQUE AXIS *b*



4	*c*	1	x, y, z $\bar{x}, y, \bar{z}$ $\bar{x}, \bar{y}, \bar{z}$ $x, \bar{y}, z$	Rhombic prism *Rectangle through origin*	(hkl) $(\bar{h}k\bar{l})$ $(\bar{h}\bar{k}\bar{l})$ $(h\bar{k}l)$
2	*b*	*m*	$x, 0, z$ $\bar{x}, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	$(h0l)$ $(\bar{h}0\bar{l})$
2	*a*	2	$0, y, 0$ $0, \bar{y}, 0$	Pinacoid or parallelohedron *Line segment through origin*	(010) $(0\bar{1}0)$
1	*o*	2/*m*	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

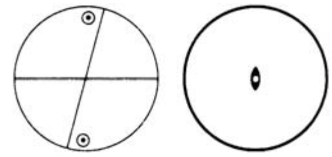
Along [100]	Along [010]	Along [001]
2*mm*	2	2*mm*

Table 3.2.3.2 (continued)

MONOCLINIC SYSTEM (*cont.*)

$2/m$ C_{2h}

UNIQUE AXIS c



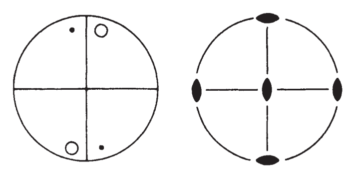
4	*c*	1	x, y, z $\bar{x}, \bar{y}, z$ $\bar{x}, \bar{y}, \bar{z}$ $x, y, \bar{z}$	Rhombic prism *Rectangle through origin*	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{h}\bar{k}\bar{l})$ $(hk\bar{l})$
2	*b*	*m*	$x, y, 0$ $\bar{x}, \bar{y}, 0$	Pinacoid or parallelohedron *Line segment through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$
2	*a*	2	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(001) $(00\bar{1})$
1	*o*	$2/m$	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [100]	Along [010]	Along [001]
$2mm$	$2mm$	2

ORTHORHOMBIC SYSTEM

222 D_2



4	*d*	1	x, y, z $\bar{x}, \bar{y}, z$ $\bar{x}, y, \bar{z}$ $x, \bar{y}, \bar{z}$	Rhombic disphenoid or rhombic tetrahedron *Rhombic tetrahedron*	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$
				Rhombic prism *Rectangle through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$ $(\bar{h}k0)$ $(h\bar{k}0)$
				Rhombic prism *Rectangle through origin*	$(h0l)$ $(\bar{h}0l)$ $(\bar{h}0\bar{l})$ $(h0\bar{l})$
				Rhombic prism *Rectangle through origin*	$(0kl)$ $(0\bar{k}l)$ $(0k\bar{l})$ $(0\bar{k}\bar{l})$
2	*c*	..2	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(001) $(00\bar{1})$
2	*b*	.2.	$0, y, 0$ $0, \bar{y}, 0$	Pinacoid or parallelohedron *Line segment through origin*	(010) $(0\bar{1}0)$
2	*a*	2..	$x, 0, 0$ $\bar{x}, 0, 0$	Pinacoid or parallelohedron *Line segment through origin*	(100) $(\bar{1}00)$
1	*o*	222	$0, 0, 0$	*Point in origin*	

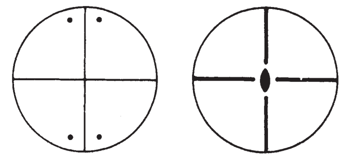
Symmetry of special projections

Along [100]	Along [010]	Along [001]
$2mm$	$2mm$	$2mm$

Table 3.2.3.2 (continued)

ORTHORHOMBIC SYSTEM (*cont.*)

*mm*2 C_{2v}

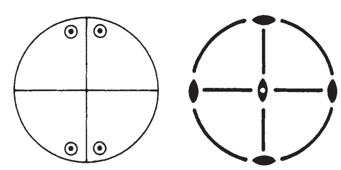


4	*d*	1	x, y, z $\bar{x}, \bar{y}, z$ $x, \bar{y}, z$ $\bar{x}, y, z$	Rhombic pyramid *Rectangle*	(hkl) $(\bar{h}\bar{k}l)$ $(h\bar{k}l)$ $(\bar{h}kl)$
				Rhombic prism *Rectangle through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$ $(h\bar{k}0)$ $(\bar{h}k0)$
2	*c*	*m*..	$0, y, z$ $0, \bar{y}, z$	Dome or dihedron *Line segment*	$(0kl)$ $(0\bar{k}l)$
				Pinacoid or parallelohedron *Line segment through origin*	(010) $(0\bar{1}0)$
2	*b*	.*m*.	$x, 0, z$ $\bar{x}, 0, z$	Dome or dihedron *Line segment*	$(h0l)$ $(\bar{h}0l)$
				Pinacoid or parallelohedron *Line segment through origin*	(100) $(\bar{1}00)$
1	*a*	*mm*2	$0, 0, z$	Pedion or monohedron *Single point*	(001) or $(00\bar{1})$

Symmetry of special projections

Along [100]	Along [010]	Along [001]
m	*m*	2*mm*

$\dfrac{2}{m}\dfrac{2}{m}\dfrac{2}{m}$ (mmm) D_{2h}



8	*g*	1	x, y, z $\bar{x}, \bar{y}, z$ $\bar{x}, y, \bar{z}$ $x, \bar{y}, \bar{z}$ $\bar{x}, \bar{y}, \bar{z}$ $x, y, \bar{z}$ $x, \bar{y}, z$ $\bar{x}, y, z$	Rhombic dipyramid *Rectangular prism*	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$ $(\bar{h}\bar{k}\bar{l})$ $(hk\bar{l})$ $(h\bar{k}l)$ $(\bar{h}kl)$
4	*f*	..*m*	$x, y, 0$ $\bar{x}, \bar{y}, 0$ $\bar{x}, y, 0$ $x, \bar{y}, 0$	Rhombic prism *Rectangle through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$ $(\bar{h}k0)$ $(h\bar{k}0)$
4	*e*	.*m*.	$x, 0, z$ $\bar{x}, 0, z$ $\bar{x}, 0, \bar{z}$ $x, 0, \bar{z}$	Rhombic prism *Rectangle through origin*	$(h0l)$ $(\bar{h}0l)$ $(\bar{h}0\bar{l})$ $(h0\bar{l})$
4	*d*	*m*..	$0, y, z$ $0, \bar{y}, z$ $0, y, \bar{z}$ $0, \bar{y}, \bar{z}$	Rhombic prism *Rectangle through origin*	$(0kl)$ $(0\bar{k}l)$ $(0k\bar{l})$ $(0\bar{k}\bar{l})$
2	*c*	*mm*2	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(001) $(00\bar{1})$
2	*b*	*m*2*m*	$0, y, 0$ $0, \bar{y}, 0$	Pinacoid or parallelohedron *Line segment through origin*	(010) $(0\bar{1}0)$
2	*a*	2*mm*	$x, 0, 0$ $\bar{x}, 0, 0$	Pinacoid or parallelohedron *Line segment through origin*	(100) $(\bar{1}00)$
1	*o*	*mmm*	$0, 0, 0$	*Point in origin*	

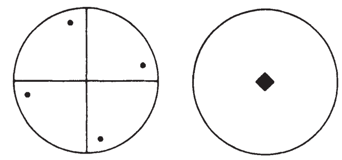
Symmetry of special projections

Along [100]	Along [010]	Along [001]
2*mm*	2*mm*	2*mm*

Table 3.2.3.2 (continued)

TETRAGONAL SYSTEM

4 $\quad C_4$

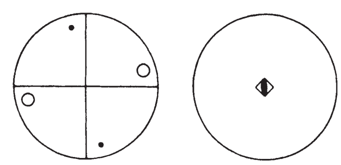


4	*b*	1	$x, y, z \quad \bar{x}, \bar{y}, z \quad \bar{y}, x, z \quad y, \bar{x}, z$	Tetragonal pyramid *Square*	$(hkl) \quad (\bar{h}\bar{k}l) \quad (\bar{k}hl) \quad (k\bar{h}l)$
				Tetragonal prism *Square through origin*	$(hk0) \quad (\bar{h}\bar{k}0) \quad (\bar{k}h0) \quad (k\bar{h}0)$
1	*a*	4..	$0, 0, z$	Pedion or monohedron *Single point*	(001) or $(00\bar{1})$

Symmetry of special projections

Along [001]	Along [100]	Along [110]
4	*m*	*m*

$\bar{4} \quad S_4$

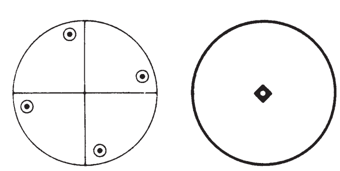


4	*b*	1	$x, y, z \quad \bar{x}, \bar{y}, z \quad y, \bar{x}, \bar{z} \quad \bar{y}, x, \bar{z}$	Tetragonal disphenoid or tetragonal tetrahedron *Tetragonal tetrahedron*	$(hkl) \quad (\bar{h}\bar{k}l) \quad (k\bar{h}\bar{l}) \quad (\bar{k}h\bar{l})$
				Tetragonal prism *Square through origin*	$(hk0) \quad (\bar{h}\bar{k}0) \quad (k\bar{h}0) \quad (\bar{k}h0)$
2	*a*	2..	$0, 0, z \quad 0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	$(001) \quad (00\bar{1})$
1	*o*	$\bar{4}$..	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [110]
4	*m*	*m*

4/*m* $\quad C_{4h}$



8	*c*	1	$x, y, z \quad \bar{x}, \bar{y}, z \quad \bar{y}, x, z \quad y, \bar{x}, z$ $\bar{x}, \bar{y}, \bar{z} \quad x, y, \bar{z} \quad y, \bar{x}, \bar{z} \quad \bar{y}, x, \bar{z}$	Tetragonal dipyramid *Tetragonal prism*	$(hkl) \quad (\bar{h}\bar{k}l) \quad (\bar{k}hl) \quad (k\bar{h}l)$ $(\bar{h}\bar{k}\bar{l}) \quad (hk\bar{l}) \quad (k\bar{h}\bar{l}) \quad (\bar{k}h\bar{l})$
4	*b*	*m*..	$x, y, 0 \quad \bar{x}, \bar{y}, 0 \quad \bar{y}, x, 0 \quad y, \bar{x}, 0$	Tetragonal prism *Square through origin*	$(hk0) \quad (\bar{h}\bar{k}0) \quad (\bar{k}h0) \quad (k\bar{h}0)$
2	*a*	4..	$0, 0, z \quad 0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	$(001) \quad (00\bar{1})$
1	*o*	4/*m*..	$0, 0, 0$	*Point in origin*	

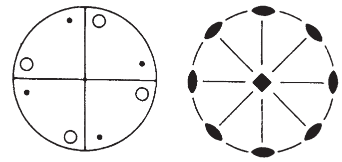
Symmetry of special projections

Along [001]	Along [100]	Along [110]
4	2*mm*	2*mm*

Table 3.2.3.2 (continued)

TETRAGONAL SYSTEM (*cont.*)

422 D_4

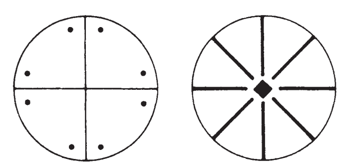


8	*d*	1	x, y, z $\bar{x}, \bar{y}, z$ $\bar{y}, x, z$ $y, \bar{x}, z$ $\bar{x}, y, \bar{z}$ $x, \bar{y}, \bar{z}$ $y, x, \bar{z}$ $\bar{y}, \bar{x}, \bar{z}$	Tetragonal trapezohedron *Twisted tetragonal antiprism*	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{k}hl)$ $(k\bar{h}l)$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$ $(kh\bar{l})$ $(\bar{k}\bar{h}\bar{l})$
				Ditetragonal prism *Truncated square through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$ $(\bar{k}h0)$ $(k\bar{h}0)$ $(\bar{h}k0)$ $(h\bar{k}0)$ $(kh0)$ $(\bar{k}\bar{h}0)$
				Tetragonal dipyramid *Tetragonal prism*	$(h0l)$ $(\bar{h}0l)$ $(0hl)$ $(0\bar{h}l)$ $(\bar{h}0\bar{l})$ $(h0\bar{l})$ $(0h\bar{l})$ $(0\bar{h}\bar{l})$
				Tetragonal dipyramid *Tetragonal prism*	(hhl) $(\bar{h}\bar{h}l)$ $(\bar{h}hl)$ $(h\bar{h}l)$ $(\bar{h}h\bar{l})$ $(h\bar{h}\bar{l})$ $(hh\bar{l})$ $(\bar{h}\bar{h}\bar{l})$
4	*c*	.2.	$x, 0, 0$ $\bar{x}, 0, 0$ $0, x, 0$ $0, \bar{x}, 0$	Tetragonal prism *Square through origin*	(100) $(\bar{1}00)$ (010) $(0\bar{1}0)$
4	*b*	..2	$x, x, 0$ $\bar{x}, \bar{x}, 0$ $\bar{x}, x, 0$ $x, \bar{x}, 0$	Tetragonal prism *Square through origin*	(110) $(\bar{1}\bar{1}0)$ $(\bar{1}10)$ $(1\bar{1}0)$
2	*a*	4..	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(001) $(00\bar{1})$
1	*o*	422	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [110]
4*mm*	2*mm*	2*mm*

4*mm* C_{4v}



8	*d*	1	x, y, z $\bar{x}, \bar{y}, z$ $\bar{y}, x, z$ $y, \bar{x}, z$ $x, \bar{y}, z$ $\bar{x}, y, z$ $\bar{y}, \bar{x}, z$ y, x, z	Ditetragonal pyramid *Truncated square*	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{k}hl)$ $(k\bar{h}l)$ $(h\bar{k}l)$ $(\bar{h}kl)$ $(\bar{k}\bar{h}l)$ (khl)
				Ditetragonal prism *Truncated square through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$ $(\bar{k}h0)$ $(k\bar{h}0)$ $(h\bar{k}0)$ $(\bar{h}k0)$ $(\bar{k}\bar{h}0)$ $(kh0)$
4	*c*	.*m*.	$x, 0, z$ $\bar{x}, 0, z$ $0, x, z$ $0, \bar{x}, z$	Tetragonal pyramid *Square*	$(h0l)$ $(\bar{h}0l)$ $(0hl)$ $(0\bar{h}l)$
				Tetragonal prism *Square through origin*	(100) $(\bar{1}00)$ (010) $(0\bar{1}0)$
4	*b*	..*m*	x, x, z $\bar{x}, \bar{x}, z$ $\bar{x}, x, z$ $x, \bar{x}, z$	Tetragonal pyramid *Square*	(hhl) $(\bar{h}\bar{h}l)$ $(\bar{h}hl)$ $(h\bar{h}l)$
				Tetragonal prism *Square through origin*	(110) $(\bar{1}\bar{1}0)$ $(\bar{1}10)$ $(1\bar{1}0)$
1	*a*	4*mm*	$0, 0, z$	Pedion or monohedron *Single point*	(001) or $(00\bar{1})$

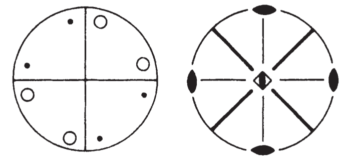
Symmetry of special projections

Along [001]	Along [100]	Along [110]
4*mm*	*m*	*m*

Table 3.2.3.2 (continued)

TETRAGONAL SYSTEM (*cont.*)

$\bar{4}2m$ $\quad D_{2d}$

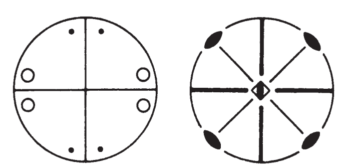


8	*d*	1	x,y,z $\quad \bar{x},\bar{y},z$ $\quad y,\bar{x},\bar{z}$ $\quad \bar{y},x,\bar{z}$ $\bar{x},y,\bar{z}$ $\quad x,\bar{y},\bar{z}$ $\quad \bar{y},\bar{x},z$ $\quad y,x,z$	Tetragonal scalenohedron *Tetragonal tetrahedron cut off by pinacoid*	(hkl) $(\bar{h}\bar{k}l)$ $(k\bar{h}\bar{l})$ $(\bar{k}h\bar{l})$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$ $(\bar{k}\bar{h}l)$ (khl)
				Ditetragonal prism *Truncated square through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$ $(k\bar{h}0)$ $(\bar{k}h0)$ $(\bar{h}k0)$ $(h\bar{k}0)$ $(\bar{k}\bar{h}0)$ $(kh0)$
				Tetragonal dipyramid *Tetragonal prism*	$(h0l)$ $(\bar{h}0l)$ $(0\bar{h}\bar{l})$ $(0h\bar{l})$ $(\bar{h}0\bar{l})$ $(h0\bar{l})$ $(0\bar{h}l)$ $(0hl)$
4	*c*	*..m*	x,x,z $\quad \bar{x},\bar{x},z$ $\quad x,\bar{x},\bar{z}$ $\quad \bar{x},x,\bar{z}$	Tetragonal disphenoid or tetragonal tetrahedron *Tetragonal tetrahedron*	(hhl) $(\bar{h}\bar{h}l)$ $(h\bar{h}\bar{l})$ $(\bar{h}h\bar{l})$
				Tetragonal prism *Square through origin*	(110) $(\bar{1}\bar{1}0)$ $(1\bar{1}0)$ $(\bar{1}10)$
4	*b*	.2.	$x,0,0$ $\quad \bar{x},0,0$ $\quad 0,\bar{x},0$ $\quad 0,x,0$	Tetragonal prism *Square through origin*	(100) $(\bar{1}00)$ $(0\bar{1}0)$ (010)
2	*a*	2.*mm*	$0,0,z$ $\quad 0,0,\bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(001) $(00\bar{1})$
1	*o*	$\bar{4}2m$	$0,0,0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [110]
4*mm*	2*mm*	*m*

$\bar{4}m2$ $\quad D_{2d}$



8	*d*	1	x,y,z $\quad \bar{x},\bar{y},z$ $\quad y,\bar{x},\bar{z}$ $\quad \bar{y},x,\bar{z}$ $x,\bar{y},z$ $\quad \bar{x},y,z$ $\quad y,x,\bar{z}$ $\quad \bar{y},\bar{x},\bar{z}$	Tetragonal scalenohedron *Tetragonal tetrahedron cut off by pinacoid*	(hkl) $(\bar{h}\bar{k}l)$ $(k\bar{h}\bar{l})$ $(\bar{k}h\bar{l})$ $(h\bar{k}l)$ $(\bar{h}kl)$ $(kh\bar{l})$ $(\bar{k}\bar{h}\bar{l})$
				Ditetragonal prism *Truncated square through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$ $(k\bar{h}0)$ $(\bar{k}h0)$ $(h\bar{k}0)$ $(\bar{h}k0)$ $(kh0)$ $(\bar{k}\bar{h}0)$
				Tetragonal dipyramid *Tetragonal prism*	(hhl) $(\bar{h}\bar{h}l)$ $(h\bar{h}\bar{l})$ $(\bar{h}h\bar{l})$ $(h\bar{h}l)$ $(\bar{h}hl)$ $(hh\bar{l})$ $(\bar{h}\bar{h}\bar{l})$
4	*c*	*.m.*	$x,0,z$ $\quad \bar{x},0,z$ $\quad 0,\bar{x},\bar{z}$ $\quad 0,x,\bar{z}$	Tetragonal disphenoid or tetragonal tetrahedron *Tetragonal tetrahedron*	$(h0l)$ $(\bar{h}0l)$ $(0\bar{h}\bar{l})$ $(0h\bar{l})$
				Tetragonal prism *Square through origin*	(100) $(\bar{1}00)$ $(0\bar{1}0)$ (010)
4	*b*	..2	$x,x,0$ $\quad \bar{x},\bar{x},0$ $\quad x,\bar{x},0$ $\quad \bar{x},x,0$	Tetragonal prism *Square through origin*	(110) $(\bar{1}\bar{1}0)$ $(1\bar{1}0)$ $(\bar{1}10)$
2	*a*	2*mm.*	$0,0,z$ $\quad 0,0,\bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(001) $(00\bar{1})$
1	*o*	$\bar{4}m2$	$0,0,0$	*Point in origin*	

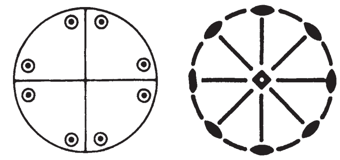
Symmetry of special projections

Along [001]	Along [100]	Along [110]
4*mm*	*m*	2*mm*

Table 3.2.3.2 (continued)

TETRAGONAL SYSTEM (*cont.*)

$4/mmm$ $\frac{4}{m}\frac{2}{m}\frac{2}{m}$ D_{4h}



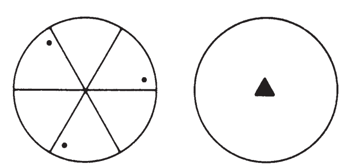
16	*g*	1	x, y, z $\bar{x}, \bar{y}, z$ $\bar{y}, x, z$ $y, \bar{x}, z$ $\bar{x}, y, \bar{z}$ $x, \bar{y}, \bar{z}$ $y, x, \bar{z}$ $\bar{y}, \bar{x}, \bar{z}$ $\bar{x}, \bar{y}, \bar{z}$ $x, y, \bar{z}$ $y, \bar{x}, \bar{z}$ $\bar{y}, x, \bar{z}$ $x, \bar{y}, z$ $\bar{x}, y, z$ $\bar{y}, \bar{x}, z$ y, x, z	Ditetragonal dipyramid *Edge-truncated tetragonal prism*	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{k}hl)$ $(k\bar{h}l)$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$ $(kh\bar{l})$ $(\bar{k}\bar{h}\bar{l})$ $(\bar{h}\bar{k}\bar{l})$ $(hk\bar{l})$ $(k\bar{h}\bar{l})$ $(\bar{k}h\bar{l})$ $(h\bar{k}l)$ $(\bar{h}kl)$ $(\bar{k}\bar{h}l)$ (khl)
8	*f*	*.m.*	$x, 0, z$ $\bar{x}, 0, z$ $0, x, z$ $0, \bar{x}, z$ $\bar{x}, 0, \bar{z}$ $x, 0, \bar{z}$ $0, x, \bar{z}$ $0, \bar{x}, \bar{z}$	Tetragonal dipyramid *Tetragonal prism*	$(h0l)$ $(\bar{h}0l)$ $(0hl)$ $(0\bar{h}l)$ $(\bar{h}0\bar{l})$ $(h0\bar{l})$ $(0h\bar{l})$ $(0\bar{h}\bar{l})$
8	*e*	*..m*	x, x, z $\bar{x}, \bar{x}, z$ $\bar{x}, x, z$ $x, \bar{x}, z$ $\bar{x}, x, \bar{z}$ $x, \bar{x}, \bar{z}$ $x, x, \bar{z}$ $\bar{x}, \bar{x}, \bar{z}$	Tetragonal dipyramid *Tetragonal prism*	(hhl) $(\bar{h}\bar{h}l)$ $(\bar{h}hl)$ $(h\bar{h}l)$ $(\bar{h}h\bar{l})$ $(h\bar{h}\bar{l})$ $(hh\bar{l})$ $(\bar{h}\bar{h}\bar{l})$
8	*d*	*m..*	$x, y, 0$ $\bar{x}, \bar{y}, 0$ $\bar{y}, x, 0$ $y, \bar{x}, 0$ $\bar{x}, y, 0$ $x, \bar{y}, 0$ $y, x, 0$ $\bar{y}, \bar{x}, 0$	Ditetragonal prism *Truncated square through origin*	$(hk0)$ $(\bar{h}\bar{k}0)$ $(\bar{k}h0)$ $(k\bar{h}0)$ $(\bar{h}k0)$ $(h\bar{k}0)$ $(kh0)$ $(\bar{k}\bar{h}0)$
4	*c*	*m2m.*	$x, 0, 0$ $\bar{x}, 0, 0$ $0, x, 0$ $0, \bar{x}, 0$	Tetragonal prism *Square through origin*	(100) $(\bar{1}00)$ (010) $(0\bar{1}0)$
4	*b*	*m.m*2	$x, x, 0$ $\bar{x}, \bar{x}, 0$ $\bar{x}, x, 0$ $x, \bar{x}, 0$	Tetragonal prism *Square through origin*	(110) $(\bar{1}\bar{1}0)$ $(\bar{1}10)$ $(1\bar{1}0)$
2	*a*	4*mm*	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(001) $(00\bar{1})$
1	*o*	4/*mmm*	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [110]
4*mm*	2*mm*	2*mm*

TRIGONAL SYSTEM

3 C_3
HEXAGONAL AXES



3	*b*	1	x, y, z $\bar{y}, x-y, z$ $\bar{x}+y, \bar{x}, z$	Trigonal pyramid *Trigon*	$(hkil)$ $(ihkl)$ $(kihl)$
				Trigonal prism *Trigon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$
1	*a*	3..	$0, 0, z$	Pedion or monohedron *Single point*	(0001) or $(000\bar{1})$

Symmetry of special projections

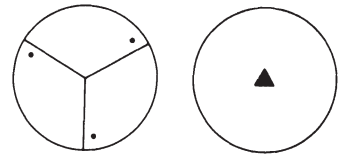
Along [001]	Along [100]	Along [210]
3	1	1

Table 3.2.3.2 (continued)

TRIGONAL SYSTEM (*cont.*)

3 C_3

RHOMBOHEDRAL AXES



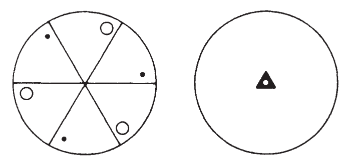
3	*b*	1	x, y, z $\quad z, x, y$ $\quad y, z, x$	Trigonal pyramid *Trigon*	(hkl) (lhk) (klh)
				Trigonal prism *Trigon through origin*	$(hk(\overline{h+k}))$ $((\overline{h+k})hk)$ $(k(\overline{h+k})h)$
1	*a*	3.	x, x, x	Pedion or monohedron *Single point*	(111) or $(\bar{1}\bar{1}\bar{1})$

Symmetry of special projections

Along [111]	Along $[1\bar{1}0]$	Along $[2\bar{1}\bar{1}]$
3	1	1

$\bar{3}$ C_{3i}

HEXAGONAL AXES



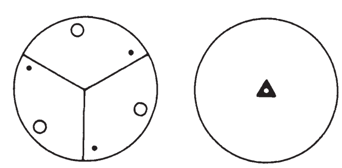
6	*b*	1	x, y, z $\quad \bar{y}, x-y, z$ $\quad \bar{x}+y, \bar{x}, z$ $\bar{x}, \bar{y}, \bar{z}$ $\quad y, \bar{x}+y, \bar{z}$ $\quad x-y, x, \bar{z}$	Rhombohedron *Trigonal antiprism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar{h}\bar{k}\bar{i}\bar{l})$ $(\bar{i}\bar{h}\bar{k}\bar{l})$ $(\bar{k}\bar{i}\bar{h}\bar{l})$
				Hexagonal prism *Hexagon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{h}\bar{k}\bar{i}0)$ $(\bar{i}\bar{h}\bar{k}0)$ $(\bar{k}\bar{i}\bar{h}0)$
2	*a*	3..	$0, 0, z$ $\quad 0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	$\bar{3}$..	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [210]
6	2	2

$\bar{3}$ C_{3i}

RHOMBOHEDRAL AXES



6	*b*	1	x, y, z $\quad z, x, y$ $\quad y, z, x$ $\bar{x}, \bar{y}, \bar{z}$ $\quad \bar{z}, \bar{x}, \bar{y}$ $\quad \bar{y}, \bar{z}, \bar{x}$	Rhombohedron *Trigonal antiprism*	(hkl) (lhk) (klh) $(\bar{h}\bar{k}\bar{l})$ $(\bar{l}\bar{h}\bar{k})$ $(\bar{k}\bar{l}\bar{h})$
				Hexagonal prism *Hexagon through origin*	$(hk(\overline{h+k}))$ $((\overline{h+k})hk)$ $(k(\overline{h+k})h)$ $(\bar{h}\bar{k}(h+k))$ $((h+k)\bar{h}\bar{k})$ $(\bar{k}(h+k)\bar{h})$
2	*a*	3.	x, x, x $\quad \bar{x}, \bar{x}, \bar{x}$	Pinacoid or parallelohedron *Line segment through origin*	(111) $(\bar{1}\bar{1}\bar{1})$
1	*o*	$\bar{3}$.	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

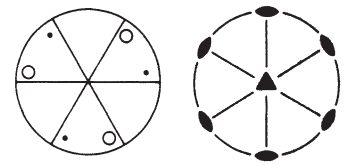
Along [111]	Along $[1\bar{1}0]$	Along $[2\bar{1}\bar{1}]$
6	2	2

Table 3.2.3.2 (continued)

TRIGONAL SYSTEM (*cont.*)

312 D_3

HEXAGONAL AXES



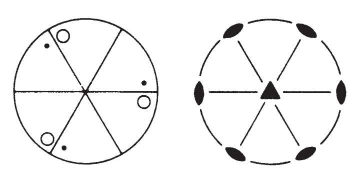
6	*c*	1	x, y, z $\bar{y}, x-y, z$ $\bar{x}+y, \bar{x}, z$ $\bar{y}, \bar{x}, \bar{z}$ $\bar{x}+y, y, \bar{z}$ $x, x-y, \bar{z}$	Trigonal trapezohedron *Twisted trigonal antiprism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar{k}\bar{h}\bar{i}\bar{l})$ $(\bar{h}\bar{i}\bar{k}\bar{l})$ $(\bar{i}\bar{k}\bar{h}\bar{l})$
				Ditrigonal prism *Truncated trigon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{k}\bar{h}\bar{i}0)$ $(\bar{h}\bar{i}\bar{k}0)$ $(\bar{i}\bar{k}\bar{h}0)$
				Trigonal dipyramid *Trigonal prism*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(0\bar{h}h\bar{l})$ $(\bar{h}h0\bar{l})$ $(h0\bar{h}\bar{l})$
				Rhombohedron *Trigonal antiprism*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(\bar{h}\bar{h}2h\bar{l})$ $(\bar{h}2h\bar{h}\bar{l})$ $(2h\bar{h}\bar{h}\bar{l})$
				Hexagonal prism *Hexagon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ $(\bar{1}\bar{1}20)$ $(\bar{1}2\bar{1}0)$ $(2\bar{1}\bar{1}0)$
3	*b*	..2	$x, \bar{x}, 0$ $x, 2x, 0$ $2\bar{x}, \bar{x}, 0$	Trigonal prism *Trigon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ or $(\bar{1}010)$ $(1\bar{1}00)$ $(01\bar{1}0)$
2	*a*	3..	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	3.2	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [210]
$3m$	1	2

321 D_3

HEXAGONAL AXES



6	*c*	1	x, y, z $\bar{y}, x-y, z$ $\bar{x}+y, \bar{x}, z$ $y, x, \bar{z}$ $x-y, \bar{y}, \bar{z}$ $\bar{x}, \bar{x}+y, \bar{z}$	Trigonal trapezohedron *Twisted trigonal antiprism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(khi\bar{l})$ $(hik\bar{l})$ $(ikh\bar{l})$
				Ditrigonal prism *Truncated trigon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(khi0)$ $(hik0)$ $(ikh0)$
				Trigonal dipyramid *Trigonal prism*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(hh\overline{2h}\bar{l})$ $(h\overline{2h}h\bar{l})$ $(\overline{2h}hh\bar{l})$
				Rhombohedron *Trigonal antiprism*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(0h\bar{h}\bar{l})$ $(h\bar{h}0\bar{l})$ $(\bar{h}0h\bar{l})$
				Hexagonal prism *Hexagon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ $(01\bar{1}0)$ $(1\bar{1}00)$ $(\bar{1}010)$
3	*b*	.2.	$x, 0, 0$ $0, x, 0$ $\bar{x}, \bar{x}, 0$	Trigonal prism *Trigon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ or $(\bar{1}\bar{1}20)$ $(2\bar{1}\bar{1}0)$ $(\bar{1}2\bar{1}0)$
2	*a*	3..	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	32.	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

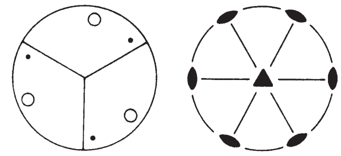
Along [001]	Along [100]	Along [210]
$3m$	2	1

Table 3.2.3.2 (continued)

TRIGONAL SYSTEM (*cont.*)

32 D_3

RHOMBOHEDRAL AXES



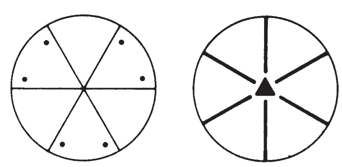
6	*c*	1	x, y, z z, x, y y, z, x $\bar z, \bar y, \bar x$ $\bar y, \bar x, \bar z$ $\bar x, \bar z, \bar y$	Trigonal trapezohedron *Twisted trigonal antiprism*	(hkl) (lhk) (klh) $(\bar k\bar h\bar l)$ $(\bar h\bar l\bar k)$ $(\bar l\bar k\bar h)$
				Ditrigonal prism *Truncated trigon through origin*	$(hk\overline{h+k})$ $(\overline{h+k}hk)$ $(k\overline{h+k}h)$ $(\bar k\bar h(h+k))$ $(\bar h(h+k)\bar k)$ $((h+k)\bar k\bar h)$
				Trigonal dipyramid *Trigonal prism*	$(hk(2k-h))$ $((2k-h)hk)$ $(k(2k-h)h)$ $(\bar k\bar h(h-2k))$ $(\bar h(h-2k)\bar k)$ $((h-2k)\bar k\bar h)$
				Rhombohedron *Trigonal antiprism*	(hhl) (lhh) (hlh) $(\bar h\bar h\bar l)$ $(\bar h\bar l\bar h)$ $(\bar l\bar h\bar h)$
				Hexagonal prism *Hexagon through origin*	$(11\bar 2)$ $(\bar 211)$ $(1\bar 21)$ $(\bar 1\bar 12)$ $(\bar 12\bar 1)$ $(2\bar 1\bar 1)$
3	*b*	.2	$x, \bar x, 0$ $0, x, \bar x$ $\bar x, 0, x$	Trigonal prism *Trigon through origin*	$(01\bar 1)$ $(\bar 101)$ $(1\bar 10)$ or $(0\bar 11)$ $(10\bar 1)$ $(\bar 110)$
2	*a*	3.	x, x, x $\bar x, \bar x, \bar x$	Pinacoid or parallelohedron *Line segment through origin*	(111) $(\bar 1\bar 1\bar 1)$
1	*o*	32	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [111]	Along [$1\bar 10$]	Along [$2\bar 1\bar 1$]
$3m$	2	1

$3m1$ C_{3v}

HEXAGONAL AXES



6	*c*	1	x, y, z $\bar y, x-y, z$ $\bar x+y, \bar x, z$ $\bar y, \bar x, z$ $\bar x+y, y, z$ $x, x-y, z$	Ditrigonal pyramid *Truncated trigon*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar k\bar h\bar il)$ $(\bar h\bar i\bar kl)$ $(\bar i\bar k\bar hl)$
				Ditrigonal prism *Truncated trigon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar k\bar h\bar i0)$ $(\bar h\bar i\bar k0)$ $(\bar i\bar k\bar h0)$
				Hexagonal pyramid *Hexagon*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(\bar h\bar h2hl)$ $(\bar h2h\bar hl)$ $(2h\bar h\bar hl)$
				Hexagonal prism *Hexagon through origin*	$(11\bar 20)$ $(\bar 2110)$ $(1\bar 210)$ $(\bar 1\bar 120)$ $(\bar 12\bar 10)$ $(2\bar 1\bar 10)$
3	*b*	.*m*.	$x, \bar x, z$ $x, 2x, z$ $2\bar x, \bar x, z$	Trigonal pyramid *Trigon*	$(h0\bar hl)$ $(\bar hh0l)$ $(0\bar hhl)$
				Trigonal prism *Trigon through origin*	$(10\bar 10)$ $(\bar 1100)$ $(0\bar 110)$ or $(\bar 1010)$ $(1\bar 100)$ $(01\bar 10)$
1	*a*	3*m*.	$0, 0, z$	Pedion or monohedron *Single point*	(0001) or $(000\bar 1)$

Symmetry of special projections

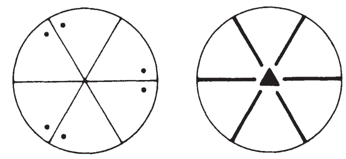
Along [001]	Along [100]	Along [210]
$3m$	1	m

Table 3.2.3.2 (continued)

TRIGONAL SYSTEM (*cont.*)

$31m$ C_{3v}

HEXAGONAL AXES



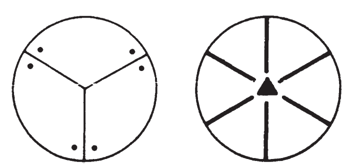
6	*c*	1	x, y, z $\bar{y}, x-y, z$ $\bar{x}+y, \bar{x}, z$ y, x, z $x-y, \bar{y}, z$ $\bar{x}, \bar{x}+y, z$	Ditrigonal pyramid *Truncated trigon*	$(hkil)$ $(ihkl)$ $(kihl)$ $(khil)$ $(hikl)$ $(ikhl)$
				Ditrigonal prism *Truncated trigon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(khi0)$ $(hik0)$ $(ikh0)$
				Hexagonal pyramid *Hexagon*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(0h\bar{h}l)$ $(h\bar{h}0l)$ $(\bar{h}0hl)$
				Hexagonal prism *Hexagon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ $(01\bar{1}0)$ $(1\bar{1}00)$ $(\bar{1}010)$
3	*b*	..*m*	$x, 0, z$ $0, x, z$ $\bar{x}, \bar{x}, z$	Trigonal pyramid *Trigon*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$
				Trigonal prism *Trigon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ or $(\bar{1}\bar{1}20)$ $(2\bar{1}\bar{1}0)$ $(\bar{1}2\bar{1}0)$
1	*a*	3.*m*	$0, 0, z$	Pedion or monohedron *Single point*	(0001) or $(000\bar{1})$

Symmetry of special projections

Along [001]	Along [100]	Along [210]
$3m$	m	1

$3m$ C_{3v}

RHOMBOHEDRAL AXES



6	*c*	1	x, y, z z, x, y y, z, x z, y, x y, x, z x, z, y	Ditrigonal pyramid *Truncated trigon*	(hkl) (lhk) (klh) (khl) (hlk) (lkh)
				Ditrigonal prism *Truncated trigon through origin*	$(hk(\overline{h+k}))$ $((\overline{h+k})hk)$ $(k(\overline{h+k})h)$ $(kh(\overline{h+k}))$ $(h(\overline{h+k})k)$ $((\overline{h+k})kh)$
				Hexagonal pyramid *Hexagon*	$(hk(2k-h))$ $((2k-h)hk)$ $(k(2k-h)h)$ $(kh(2k-h))$ $(h(2k-h)k)$ $((2k-h)kh)$
				Hexagonal prism *Hexagon through origin*	$(01\bar{1})$ $(\bar{1}01)$ $(1\bar{1}0)$ $(10\bar{1})$ $(0\bar{1}1)$ $(\bar{1}10)$
3	*b*	.*m*	x, y, x x, x, y y, x, x	Trigonal pyramid *Trigon*	(hhl) (lhh) (hlh)
				Trigonal prism *Trigon through origin*	$(11\bar{2})$ $(\bar{2}11)$ $(1\bar{2}1)$ or $(\bar{1}\bar{1}2)$ $(2\bar{1}\bar{1})$ $(\bar{1}2\bar{1})$
1	*a*	3*m*	x, x, x	Pedion or monohedron *Single point*	(111) or $(\bar{1}\bar{1}\bar{1})$

Symmetry of special projections

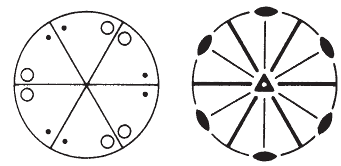
Along [111]	Along $[1\bar{1}0]$	Along $[2\bar{1}\bar{1}]$
$3m$	1	m

Table 3.2.3.2 (continued)

TRIGONAL SYSTEM (*cont.*)

$\bar{3}1m$ D_{3d}

$\bar{3}1\frac{2}{m}$



HEXAGONAL AXES

12	*d*	1	x,y,z $\bar{y},x-y,z$ $\bar{x}+y,\bar{x},z$ $\bar{y},\bar{x},\bar{z}$ $\bar{x}+y,y,\bar{z}$ $x,x-y,\bar{z}$ $\bar{x},\bar{y},\bar{z}$ $y,\bar{x}+y,\bar{z}$ $x-y,x,\bar{z}$ y,x,z $x-y,\bar{y},z$ $\bar{x},\bar{x}+y,z$	Ditrigonal scalenohedron or hexagonal scalenohedron *Trigonal antiprism sliced off by pinacoid*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar{k}\bar{h}\bar{i}\bar{l})$ $(\bar{h}\bar{i}\bar{k}\bar{l})$ $(\bar{i}\bar{k}\bar{h}\bar{l})$ $(\bar{h}\bar{k}\bar{i}\bar{l})$ $(\bar{i}\bar{h}\bar{k}\bar{l})$ $(\bar{k}\bar{i}\bar{h}\bar{l})$ $(khil)$ $(hikl)$ $(ikhl)$
				Dihexagonal prism *Truncated hexagon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{k}\bar{h}\bar{i}0)$ $(\bar{h}\bar{i}\bar{k}0)$ $(\bar{i}\bar{k}\bar{h}0)$ $(\bar{h}\bar{k}\bar{i}0)$ $(\bar{i}\bar{h}\bar{k}0)$ $(\bar{k}\bar{i}\bar{h}0)$ $(khi0)$ $(hik0)$ $(ikh0)$
				Hexagonal dipyramid *Hexagonal prism*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(0\bar{h}h\bar{l})$ $(\bar{h}h0\bar{l})$ $(h0\bar{h}\bar{l})$ $(\bar{h}0h\bar{l})$ $(h\bar{h}0\bar{l})$ $(0h\bar{h}\bar{l})$ $(0h\bar{h}l)$ $(h\bar{h}0l)$ $(\bar{h}0hl)$
6	*c*	..*m*	$x,0,z$ $0,x,z$ $\bar{x},\bar{x},z$ $0,\bar{x},\bar{z}$ $\bar{x},0,\bar{z}$ $x,x,\bar{z}$	Rhombohedron *Trigonal antiprism*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(\bar{h}\bar{h}2h\bar{l})$ $(\bar{h}2h\bar{h}\bar{l})$ $(2h\bar{h}\bar{h}\bar{l})$
				Hexagonal prism *Hexagon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ $(\bar{1}\bar{1}20)$ $(\bar{1}2\bar{1}0)$ $(2\bar{1}\bar{1}0)$
6	*b*	..2	$x,\bar{x},0$ $x,2x,0$ $2\bar{x},\bar{x},0$ $\bar{x},x,0$ $\bar{x},2\bar{x},0$ $2x,x,0$	Hexagonal prism *Hexagon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ $(\bar{1}010)$ $(1\bar{1}00)$ $(01\bar{1}0)$
2	*a*	3.*m*	$0,0,z$ $0,0,\bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	$\bar{3}$.*m*	$0,0,0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [210]
6*mm*	2*mm*	2

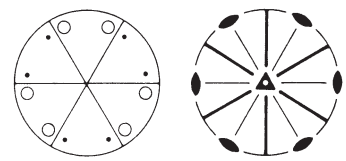
Table 3.2.3.2 (continued)

TRIGONAL SYSTEM (*cont.*)

$\bar{3}m1$

$\bar{3}\frac{2}{m}1$

D_{3d}



HEXAGONAL AXES

12	*d*	1	x, y, z $\bar{y}, x-y, z$ $\bar{x}+y, \bar{x}, z$ $y, x, \bar{z}$ $x-y, \bar{y}, \bar{z}$ $\bar{x}, \bar{x}+y, \bar{z}$ $\bar{x}, \bar{y}, \bar{z}$ $y, \bar{x}+y, \bar{z}$ $x-y, x, \bar{z}$ $\bar{y}, \bar{x}, z$ $\bar{x}+y, y, z$ $x, x-y, z$	Ditrigonal scalenohedron or hexagonal scalenohedron *Trigonal antiprism sliced off by pinacoid*	$(hkil)$ $(ihkl)$ $(kihl)$ $(khi\bar{l})$ $(hik\bar{l})$ $(ikh\bar{l})$ $(\bar{h}\bar{k}\bar{i}\bar{l})$ $(\bar{i}\bar{h}\bar{k}\bar{l})$ $(\bar{k}\bar{i}\bar{h}\bar{l})$ $(\bar{k}\bar{h}\bar{i}l)$ $(\bar{h}\bar{i}\bar{k}l)$ $(\bar{i}\bar{k}\bar{h}l)$
				Dihexagonal prism *Truncated hexagon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(khi0)$ $(hik0)$ $(ikh0)$ $(\bar{h}\bar{k}\bar{i}0)$ $(\bar{i}\bar{h}\bar{k}0)$ $(\bar{k}\bar{i}\bar{h}0)$ $(\bar{k}\bar{h}\bar{i}0)$ $(\bar{h}\bar{i}\bar{k}0)$ $(\bar{i}\bar{k}\bar{h}0)$
				Hexagonal dipyramid *Hexagonal prism*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(hh\overline{2h}\bar{l})$ $(h\overline{2h}h\bar{l})$ $(\overline{2h}hh\bar{l})$ $(\bar{h}\bar{h}2h\bar{l})$ $(2h\bar{h}\bar{h}\bar{l})$ $(\bar{h}2h\bar{h}\bar{l})$ $(\bar{h}\bar{h}2hl)$ $(\bar{h}2h\bar{h}l)$ $(2h\bar{h}\bar{h}l)$
6	*c*	*.m.*	$x, \bar{x}, z$ $x, 2x, z$ $2\bar{x}, \bar{x}, z$ $\bar{x}, x, \bar{z}$ $2x, x, \bar{z}$ $\bar{x}, 2\bar{x}, \bar{z}$	Rhombohedron *Trigonal antiprism*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(0h\bar{h}\bar{l})$ $(h\bar{h}0\bar{l})$ $(\bar{h}0h\bar{l})$
				Hexagonal prism *Hexagon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ $(01\bar{1}0)$ $(1\bar{1}00)$ $(\bar{1}010)$
6	*b*	*.2.*	$x, 0, 0$ $0, x, 0$ $\bar{x}, \bar{x}, 0$ $\bar{x}, 0, 0$ $0, \bar{x}, 0$ $x, x, 0$	Hexagonal prism *Hexagon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ $(\bar{1}\bar{1}20)$ $(\bar{1}2\bar{1}0)$ $(2\bar{1}\bar{1}0)$
2	*a*	3*m.*	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	$\bar{3}m.$	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [210]
6*mm*	2	2*mm*

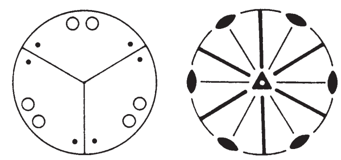
Table 3.2.3.2 (continued)

TRIGONAL SYSTEM (*cont.*)

$\bar{3}m$

$\bar{3}\frac{2}{m}$

D_{3d}



RHOMBOHEDRAL AXES

12	*d*	1	x,y,z z,x,y y,z,x $\bar{z},\bar{y},\bar{x}$ $\bar{y},\bar{x},\bar{z}$ $\bar{x},\bar{z},\bar{y}$ $\bar{x},\bar{y},\bar{z}$ $\bar{z},\bar{x},\bar{y}$ $\bar{y},\bar{z},\bar{x}$ z,y,x y,x,z x,z,y	Ditrigonal scalenohedron or hexagonal scalenohedron *Trigonal antiprism sliced off by pinacoid*	(hkl) (lhk) (klh) $(\bar{k}\bar{h}\bar{l})$ $(\bar{h}\bar{l}\bar{k})$ $(\bar{l}\bar{k}\bar{h})$ $(\bar{h}\bar{k}\bar{l})$ $(\bar{l}\bar{h}\bar{k})$ $(\bar{k}\bar{l}\bar{h})$ (khl) (hlk) (lkh)
				Dihexagonal prism *Truncated hexagon through origin*	$(hk(\overline{h+k}))$ $((\overline{h+k})hk)$ $(k(\overline{h+k})h)$ $(\bar{k}\bar{h}(h+k))$ $(\bar{h}(h+k)\bar{k})$ $((h+k)\bar{k}\bar{h})$ $(\bar{h}\bar{k}(h+k))$ $((h+k)\bar{h}\bar{k})$ $(\bar{k}(h+k)\bar{h})$ $(kh(\overline{h+k}))$ $(h(\overline{h+k})k)$ $((\overline{h+k})kh)$
				Hexagonal dipyramid *Hexagonal prism*	$(hk(2k-h))$ $((2k-h)hk)$ $(k(2k-h)h)$ $(\bar{k}\bar{h}(h-2k))$ $(\bar{h}(h-2k)\bar{k})$ $((h-2k)\bar{k}\bar{h})$ $(\bar{h}\bar{k}(h-2k))$ $((h-2k)\bar{h}\bar{k})$ $(\bar{k}(h-2k)\bar{h})$ $(kh(2k-h))$ $(h(2k-h)k)$ $((2k-h)kh)$
6	*c*	$.m$	x,y,x x,x,y y,x,x $\bar{x},\bar{y},\bar{x}$ $\bar{y},\bar{x},\bar{x}$ $\bar{x},\bar{x},\bar{y}$	Rhombohedron *Trigonal antiprism*	(hhl) (lhh) (hlh) $(\bar{h}\bar{h}\bar{l})$ $(\bar{h}\bar{l}\bar{h})$ $(\bar{l}\bar{h}\bar{h})$
				Hexagonal prism *Hexagon through origin*	$(11\bar{2})$ $(\bar{2}11)$ $(1\bar{2}1)$ $(\bar{1}\bar{1}2)$ $(\bar{1}2\bar{1})$ $(2\bar{1}\bar{1})$
6	*b*	$.2$	$x,\bar{x},0$ $0,x,\bar{x}$ $\bar{x},0,x$ $\bar{x},x,0$ $0,\bar{x},x$ $x,0,\bar{x}$	Hexagonal prism *Hexagon through origin*	$(01\bar{1})$ $(\bar{1}01)$ $(1\bar{1}0)$ $(0\bar{1}1)$ $(10\bar{1})$ $(\bar{1}10)$
2	*a*	$3m$	x,x,x $\bar{x},\bar{x},\bar{x}$	Pinacoid or parallelohedron *Line segment through origin*	(111) $(\bar{1}\bar{1}\bar{1})$
1	*o*	$\bar{3}m$	$0,0,0$	*Point in origin*	

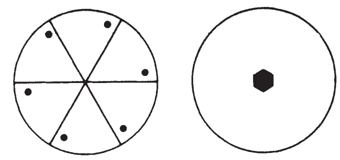
Symmetry of special projections

Along [111]	Along $[1\bar{1}0]$	Along $[2\bar{1}\bar{1}]$
$6mm$	2	$2mm$

Table 3.2.3.2 (continued)

HEXAGONAL SYSTEM

6 C_6

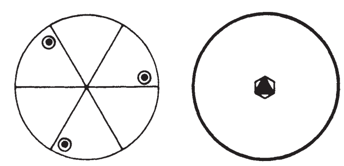


6	*b*	1	x, y, z $\quad \bar{y}, x-y, z$ $\quad \bar{x}+y, \bar{x}, z$ $\bar{x}, \bar{y}, z$ $\quad y, \bar{x}+y, z$ $\quad x-y, x, z$	Hexagonal pyramid *Hexagon*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar{h}\bar{k}\bar{i}l)$ $(\bar{i}\bar{h}\bar{k}l)$ $(\bar{k}\bar{i}\bar{h}l)$
				Hexagonal prism *Hexagon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{h}\bar{k}\bar{i}0)$ $(\bar{i}\bar{h}\bar{k}0)$ $(\bar{k}\bar{i}\bar{h}0)$
1	*a*	6..	$0, 0, z$	Pedion or monohedron *Single point*	(0001) or $(000\bar{1})$

Symmetry of special projections

Along [001]	Along [100]	Along [210]
6	*m*	*m*

$\bar{6}$ C_{3h}

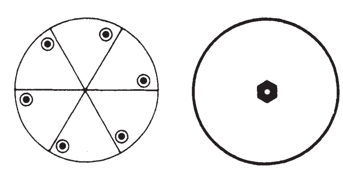


6	*c*	1	x, y, z $\quad \bar{y}, x-y, z$ $\quad \bar{x}+y, \bar{x}, z$ $x, y, \bar{z}$ $\quad \bar{y}, x-y, \bar{z}$ $\quad \bar{x}+y, \bar{x}, \bar{z}$	Trigonal dipyramid *Trigonal prism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(hki\bar{l})$ $(ihk\bar{l})$ $(kih\bar{l})$
3	*b*	*m*..	$x, y, 0$ $\quad \bar{y}, x-y, 0$ $\quad \bar{x}+y, \bar{x}, 0$	Trigonal prism *Trigon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$
2	*a*	3..	$0, 0, z$ $\quad 0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	$\bar{6}$..	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [100]	Along [210]
3	*m*	*m*

$6/m$ C_{6h}



12	*c*	1	x, y, z $\quad \bar{y}, x-y, z$ $\quad \bar{x}+y, \bar{x}, z$ $\bar{x}, \bar{y}, z$ $\quad y, \bar{x}+y, z$ $\quad x-y, x, z$ $\bar{x}, \bar{y}, \bar{z}$ $\quad y, \bar{x}+y, \bar{z}$ $\quad x-y, x, \bar{z}$ $x, y, \bar{z}$ $\quad \bar{y}, x-y, \bar{z}$ $\quad \bar{x}+y, \bar{x}, \bar{z}$	Hexagonal dipyramid *Hexagonal prism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar{h}\bar{k}\bar{i}l)$ $(\bar{i}\bar{h}\bar{k}l)$ $(\bar{k}\bar{i}\bar{h}l)$ $(hki\bar{l})$ $(ihk\bar{l})$ $(kih\bar{l})$ $(\bar{h}\bar{k}\bar{i}\bar{l})$ $(\bar{i}\bar{h}\bar{k}\bar{l})$ $(\bar{k}\bar{i}\bar{h}\bar{l})$
6	*b*	*m*..	$x, y, 0$ $\quad \bar{y}, x-y, 0$ $\quad \bar{x}+y, \bar{x}, 0$ $\bar{x}, \bar{y}, 0$ $\quad y, \bar{x}+y, 0$ $\quad x-y, x, 0$	Hexagonal prism *Hexagon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{h}\bar{k}\bar{i}0)$ $(\bar{i}\bar{h}\bar{k}0)$ $(\bar{k}\bar{i}\bar{h}0)$
2	*a*	6..	$0, 0, z$ $\quad 0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	6/*m*..	$0, 0, 0$	*Point in origin*	

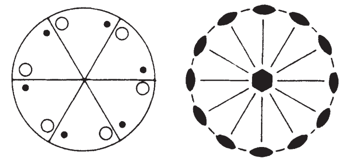
Symmetry of special projections

Along [001]	Along [100]	Along [210]
6	2*mm*	2*mm*

Table 3.2.3.2 (continued)

HEXAGONAL SYSTEM (*cont.*)

622 D_6



12	*d*	1	x,y,z $\bar{y},x-y,z$ $\bar{x}+y,\bar{x},z$ $\bar{x},\bar{y},z$ $y,\bar{x}+y,z$ $x-y,x,z$ $y,x,\bar{z}$ $x-y,\bar{y},\bar{z}$ $\bar{x},\bar{x}+y,\bar{z}$ $\bar{y},\bar{x},\bar{z}$ $\bar{x}+y,y,\bar{z}$ $x,x-y,\bar{z}$	Hexagonal trapezohedron *Twisted hexagonal antiprism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar{h}\bar{k}\bar{i}l)$ $(\bar{i}\bar{h}\bar{k}l)$ $(\bar{k}\bar{i}\bar{h}l)$ $(khi\bar{l})$ $(hik\bar{l})$ $(ikh\bar{l})$ $(\bar{k}\bar{h}\bar{i}\bar{l})$ $(\bar{h}\bar{i}\bar{k}\bar{l})$ $(\bar{i}\bar{k}\bar{h}\bar{l})$
				Dihexagonal prism *Truncated hexagon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{h}\bar{k}\bar{i}0)$ $(\bar{i}\bar{h}\bar{k}0)$ $(\bar{k}\bar{i}\bar{h}0)$ $(khi0)$ $(hik0)$ $(ikh0)$ $(\bar{k}\bar{h}\bar{i}0)$ $(\bar{h}\bar{i}\bar{k}0)$ $(\bar{i}\bar{k}\bar{h}0)$
				Hexagonal dipyramid *Hexagonal prism*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(\bar{h}0hl)$ $(h\bar{h}0l)$ $(0h\bar{h}l)$ $(0h\bar{h}\bar{l})$ $(h\bar{h}0\bar{l})$ $(\bar{h}0h\bar{l})$ $(0\bar{h}h\bar{l})$ $(\bar{h}h0\bar{l})$ $(h0\bar{h}\bar{l})$
				Hexagonal dipyramid *Hexagonal prism*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(\bar{h}\bar{h}2hl)$ $(2h\bar{h}\bar{h}l)$ $(\bar{h}2h\bar{h}l)$ $(hh\overline{2h}\bar{l})$ $(h\overline{2h}h\bar{l})$ $(\overline{2h}hh\bar{l})$ $(\bar{h}\bar{h}2h\bar{l})$ $(\bar{h}2h\bar{h}\bar{l})$ $(2h\bar{h}\bar{h}\bar{l})$
6	*c*	..2	$x,\bar{x},0$ $x,2x,0$ $2\bar{x},\bar{x},0$ $\bar{x},x,0$ $\bar{x},2\bar{x},0$ $2x,x,0$	Hexagonal prism *Hexagon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ $(\bar{1}010)$ $(1\bar{1}00)$ $(01\bar{1}0)$
6	*b*	.2.	$x,0,0$ $0,x,0$ $\bar{x},\bar{x},0$ $\bar{x},0,0$ $0,\bar{x},0$ $x,x,0$	Hexagonal prism *Hexagon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ $(\bar{1}\bar{1}20)$ $(2\bar{1}\bar{1}0)$ $(\bar{1}2\bar{1}0)$
2	*a*	6..	$0,0,z$ $0,0,\bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	622	$0,0,0$	*Point in origin*	

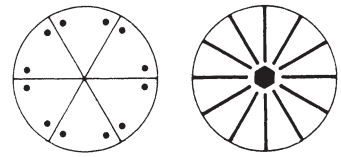
Symmetry of special projections

Along [001]	Along [100]	Along [210]
6mm	*2mm*	*2mm*

Table 3.2.3.2 (continued)

HEXAGONAL SYSTEM (*cont.*)

$6mm$ $\quad$ C_{6v}

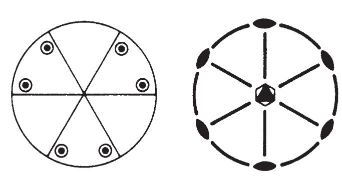


12	*d*	1	x,y,z $\quad$ $\bar{y},x-y,z$ $\quad$ $\bar{x}+y,\bar{x},z$ $\bar{x},\bar{y},z$ $\quad$ $y,\bar{x}+y,z$ $\quad$ $x-y,x,z$ $\bar{y},\bar{x},z$ $\quad$ $\bar{x}+y,y,z$ $\quad$ $x,x-y,z$ y,x,z $\quad$ $x-y,\bar{y},z$ $\quad$ $\bar{x},\bar{x}+y,z$	Dihexagonal pyramid *Truncated hexagon*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar{h}\bar{k}\bar{i}l)$ $(\bar{i}\bar{h}\bar{k}l)$ $(\bar{k}\bar{i}\bar{h}l)$ $(khil)$ $(hikl)$ $(ikhl)$ $(\bar{k}\bar{h}\bar{i}l)$ $(\bar{h}\bar{i}\bar{k}l)$ $(\bar{i}\bar{k}\bar{h}l)$
				Dihexagonal prism *Truncated hexagon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{h}\bar{k}\bar{i}0)$ $(\bar{i}\bar{h}\bar{k}0)$ $(\bar{k}\bar{i}\bar{h}0)$ $(khi0)$ $(hik0)$ $(ikh0)$ $(\bar{k}\bar{h}\bar{i}0)$ $(\bar{h}\bar{i}\bar{k}0)$ $(\bar{i}\bar{k}\bar{h}0)$
6	*c*	*.m.*	$x,\bar{x},z$ $\quad$ $x,2x,z$ $\quad$ $2\bar{x},\bar{x},z$ $\bar{x},x,z$ $\quad$ $\bar{x},2\bar{x},z$ $\quad$ $2x,x,z$	Hexagonal pyramid *Hexagon*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(\bar{h}0hl)$ $(h\bar{h}0l)$ $(0h\bar{h}l)$
				Hexagonal prism *Hexagon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ $(\bar{1}010)$ $(1\bar{1}00)$ $(01\bar{1}0)$
6	*b*	*..m*	$x,0,z$ $\quad$ $0,x,z$ $\quad$ $\bar{x},\bar{x},z$ $\bar{x},0,z$ $\quad$ $0,\bar{x},z$ $\quad$ x,x,z	Hexagonal pyramid *Hexagon*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(\bar{h}\bar{h}2hl)$ $(2h\bar{h}\bar{h}l)$ $(\bar{h}2h\bar{h}l)$
				Hexagonal prism *Hexagon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ $(\bar{1}\bar{1}20)$ $(2\bar{1}\bar{1}0)$ $(\bar{1}2\bar{1}0)$
1	*a*	$6mm$	$0,0,z$	Pedion or monohedron *Single point*	(0001) or $(000\bar{1})$

Symmetry of special projections

Along [001]	Along [100]	Along [210]
$6mm$	m	m

$\bar{6}m2$ $\quad$ D_{3h}



12	*e*	1	x,y,z $\quad$ $\bar{y},x-y,z$ $\quad$ $\bar{x}+y,\bar{x},z$ $x,y,\bar{z}$ $\quad$ $\bar{y},x-y,\bar{z}$ $\quad$ $\bar{x}+y,\bar{x},\bar{z}$ $\bar{y},\bar{x},z$ $\quad$ $\bar{x}+y,y,z$ $\quad$ $x,x-y,z$ $\bar{y},\bar{x},\bar{z}$ $\quad$ $\bar{x}+y,y,\bar{z}$ $\quad$ $x,x-y,\bar{z}$	Ditrigonal dipyramid *Edge-truncated trigonal prism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(hki\bar{l})$ $(ihk\bar{l})$ $(kih\bar{l})$ $(\bar{k}\bar{h}\bar{i}l)$ $(\bar{h}\bar{i}\bar{k}l)$ $(\bar{i}\bar{k}\bar{h}l)$ $(\bar{k}\bar{h}\bar{i}\bar{l})$ $(\bar{h}\bar{i}\bar{k}\bar{l})$ $(\bar{i}\bar{k}\bar{h}\bar{l})$
				Hexagonal dipyramid *Hexagonal prism*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(hh\overline{2h}\bar{l})$ $(\overline{2h}hh\bar{l})$ $(h\overline{2h}h\bar{l})$ $(\bar{h}\bar{h}2hl)$ $(\bar{h}2h\bar{h}l)$ $(2h\bar{h}\bar{h}l)$ $(\bar{h}\bar{h}2h\bar{l})$ $(\bar{h}2h\bar{h}\bar{l})$ $(2h\bar{h}\bar{h}\bar{l})$
6	*d*	*m..*	$x,y,0$ $\quad$ $\bar{y},x-y,0$ $\quad$ $\bar{x}+y,\bar{x},0$ $\bar{y},\bar{x},0$ $\quad$ $\bar{x}+y,y,0$ $\quad$ $x,x-y,0$	Ditrigonal prism *Truncated trigon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{k}\bar{h}\bar{i}0)$ $(\bar{h}\bar{i}\bar{k}0)$ $(\bar{i}\bar{k}\bar{h}0)$
				Hexagonal prism *Hexagon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ $(\bar{1}\bar{1}20)$ $(\bar{1}2\bar{1}0)$ $(2\bar{1}\bar{1}0)$
6	*c*	*.m.*	$x,\bar{x},z$ $\quad$ $x,2x,z$ $\quad$ $2\bar{x},\bar{x},z$ $x,\bar{x},\bar{z}$ $\quad$ $x,2x,\bar{z}$ $\quad$ $2\bar{x},\bar{x},\bar{z}$	Trigonal dipyramid *Trigonal prism*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(h0\bar{h}\bar{l})$ $(\bar{h}h0\bar{l})$ $(0\bar{h}h\bar{l})$
3	*b*	$mm2$	$x,\bar{x},0$ $\quad$ $x,2x,0$ $\quad$ $2\bar{x},\bar{x},0$	Trigonal prism *Trigon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ or $(\bar{1}010)$ $(1\bar{1}00)$ $(01\bar{1}0)$
2	*a*	$3m.$	$0,0,z$ $\quad$ $0,0,\bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	$\bar{6}m2$	$0,0,0$	*Point in origin*	

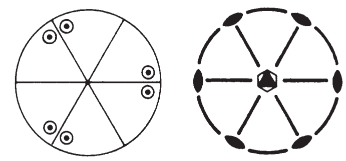
Symmetry of special projections

Along [001]	Along [100]	Along [210]
$3m$	m	$2mm$

Table 3.2.3.2 (continued)

HEXAGONAL SYSTEM (*cont.*)

$\bar{6}2m$ D_{3h}



12	*e*	1	x, y, z $\bar{y}, x-y, z$ $\bar{x}+y, \bar{x}, z$ $x, y, \bar{z}$ $\bar{y}, x-y, \bar{z}$ $\bar{x}+y, \bar{x}, \bar{z}$ $y, x, \bar{z}$ $x-y, \bar{y}, \bar{z}$ $\bar{x}, \bar{x}+y, \bar{z}$ y, x, z $x-y, \bar{y}, z$ $\bar{x}, \bar{x}+y, z$	Ditrigonal dipyramid *Edge-truncated trigonal prism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(hki\bar{l})$ $(ihk\bar{l})$ $(kih\bar{l})$ $(khi\bar{l})$ $(hik\bar{l})$ $(ikh\bar{l})$ $(khil)$ $(hikl)$ $(ikhl)$
				Hexagonal dipyramid *Hexagonal prism*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(h0\bar{h}\bar{l})$ $(\bar{h}h0\bar{l})$ $(0\bar{h}h\bar{l})$ $(0h\bar{h}\bar{l})$ $(h\bar{h}0\bar{l})$ $(\bar{h}0h\bar{l})$ $(0h\bar{h}l)$ $(h\bar{h}0l)$ $(\bar{h}0hl)$
6	*d*	*m..*	$x, y, 0$ $\bar{y}, x-y, 0$ $\bar{x}+y, \bar{x}, 0$ $y, x, 0$ $x-y, \bar{y}, 0$ $\bar{x}, \bar{x}+y, 0$	Ditrigonal prism *Truncated trigon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(khi0)$ $(hik0)$ $(ikh0)$
				Hexagonal prism *Hexagon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ $(01\bar{1}0)$ $(1\bar{1}00)$ $(\bar{1}010)$
6	*c*	*..m*	$x, 0, z$ $0, x, z$ $\bar{x}, \bar{x}, z$ $x, 0, \bar{z}$ $0, x, \bar{z}$ $\bar{x}, \bar{x}, \bar{z}$	Trigonal dipyramid *Trigonal prism*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(hh\overline{2h}\bar{l})$ $(\overline{2h}hh\bar{l})$ $(h\overline{2h}h\bar{l})$
3	*b*	*m2m*	$x, 0, 0$ $0, x, 0$ $\bar{x}, \bar{x}, 0$	Trigonal prism *Trigon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ or $(\bar{1}\bar{1}20)$ $(2\bar{1}\bar{1}0)$ $(\bar{1}2\bar{1}0)$
2	*a*	*3.m*	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	$\bar{6}2m$	$0, 0, 0$	*Point in origin*	

Symmetry of special projections

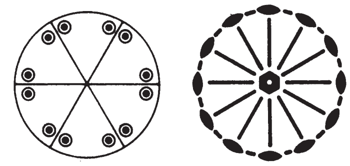
Along [001]	Along [100]	Along [210]
3m	*2mm*	*m*

Table 3.2.3.2 (continued)

HEXAGONAL SYSTEM (*cont.*)

$6/mmm$

$\frac{6}{m}\frac{2}{m}\frac{2}{m}$ D_{6h}



24	*g*	1	x, y, z $\bar{y}, x-y, z$ $\bar{x}+y, \bar{x}, z$ $\bar{x}, \bar{y}, z$ $y, \bar{x}+y, z$ $x-y, x, z$ $y, x, \bar{z}$ $x-y, \bar{y}, \bar{z}$ $\bar{x}, \bar{x}+y, \bar{z}$ $\bar{y}, \bar{x}, \bar{z}$ $\bar{x}+y, y, \bar{z}$ $x, x-y, \bar{z}$ $\bar{x}, \bar{y}, \bar{z}$ $y, \bar{x}+y, \bar{z}$ $x-y, x, \bar{z}$ $x, y, \bar{z}$ $\bar{y}, x-y, \bar{z}$ $\bar{x}+y, \bar{x}, \bar{z}$ $\bar{y}, \bar{x}, z$ $\bar{x}+y, y, z$ $x, x-y, z$ y, x, z $x-y, \bar{y}, z$ $\bar{x}, \bar{x}+y, z$	Dihexagonal dipyramid *Edge-truncated hexagonal prism*	$(hkil)$ $(ihkl)$ $(kihl)$ $(\bar{h}\bar{k}\bar{i}l)$ $(\bar{i}\bar{h}\bar{k}l)$ $(\bar{k}\bar{i}\bar{h}l)$ $(khi\bar{l})$ $(hik\bar{l})$ $(ikh\bar{l})$ $(\bar{k}\bar{h}\bar{i}\bar{l})$ $(\bar{h}\bar{i}\bar{k}\bar{l})$ $(\bar{i}\bar{k}\bar{h}\bar{l})$ $(\bar{h}\bar{k}\bar{i}\bar{l})$ $(\bar{i}\bar{h}\bar{k}\bar{l})$ $(\bar{k}\bar{i}\bar{h}\bar{l})$ $(hki\bar{l})$ $(ihk\bar{l})$ $(kih\bar{l})$ $(\bar{k}\bar{h}\bar{i}l)$ $(\bar{h}\bar{i}\bar{k}l)$ $(\bar{i}\bar{k}\bar{h}l)$ $(khil)$ $(hikl)$ $(ikhl)$
12	*f*	*m..*	$x, y, 0$ $\bar{y}, x-y, 0$ $\bar{x}+y, \bar{x}, 0$ $\bar{x}, \bar{y}, 0$ $y, \bar{x}+y, 0$ $x-y, x, 0$ $y, x, 0$ $x-y, \bar{y}, 0$ $\bar{x}, \bar{x}+y, 0$ $\bar{y}, \bar{x}, 0$ $\bar{x}+y, y, 0$ $x, x-y, 0$	Dihexagonal prism *Truncated hexagon through origin*	$(hki0)$ $(ihk0)$ $(kih0)$ $(\bar{h}\bar{k}\bar{i}0)$ $(\bar{i}\bar{h}\bar{k}0)$ $(\bar{k}\bar{i}\bar{h}0)$ $(khi0)$ $(hik0)$ $(ikh0)$ $(\bar{k}\bar{h}\bar{i}0)$ $(\bar{h}\bar{i}\bar{k}0)$ $(\bar{i}\bar{k}\bar{h}0)$
12	*e*	*.m.*	$x, 2x, z$ $2\bar{x}, \bar{x}, z$ $x, \bar{x}, z$ $\bar{x}, 2\bar{x}, z$ $2x, x, z$ $\bar{x}, x, z$ $2x, x, \bar{z}$ $\bar{x}, 2\bar{x}, \bar{z}$ $\bar{x}, x, \bar{z}$ $2\bar{x}, \bar{x}, \bar{z}$ $x, 2x, \bar{z}$ $x, \bar{x}, \bar{z}$	Hexagonal dipyramid *Hexagonal prism*	$(h0\bar{h}l)$ $(\bar{h}h0l)$ $(0\bar{h}hl)$ $(\bar{h}0hl)$ $(h\bar{h}0l)$ $(0h\bar{h}l)$ $(0h\bar{h}\bar{l})$ $(h\bar{h}0\bar{l})$ $(\bar{h}0h\bar{l})$ $(0\bar{h}h\bar{l})$ $(\bar{h}h0\bar{l})$ $(h0\bar{h}\bar{l})$
12	*d*	*..m*	$x, 0, z$ $0, x, z$ $\bar{x}, \bar{x}, z$ $\bar{x}, 0, z$ $0, \bar{x}, z$ x, x, z $0, x, \bar{z}$ $x, 0, \bar{z}$ $\bar{x}, \bar{x}, \bar{z}$ $0, \bar{x}, \bar{z}$ $\bar{x}, 0, \bar{z}$ $x, x, \bar{z}$	Hexagonal dipyramid *Hexagonal prism*	$(hh\overline{2h}l)$ $(\overline{2h}hhl)$ $(h\overline{2h}hl)$ $(\bar{h}\bar{h}2hl)$ $(2h\bar{h}\bar{h}l)$ $(\bar{h}2h\bar{h}l)$ $(hh\overline{2h}\bar{l})$ $(h\overline{2h}h\bar{l})$ $(\overline{2h}hh\bar{l})$ $(\bar{h}\bar{h}2h\bar{l})$ $(\bar{h}2h\bar{h}\bar{l})$ $(2h\bar{h}\bar{h}\bar{l})$
6	*c*	*mm*2	$x, 2x, 0$ $2\bar{x}, \bar{x}, 0$ $x, \bar{x}, 0$ $\bar{x}, 2\bar{x}, 0$ $2x, x, 0$ $\bar{x}, x, 0$	Hexagonal prism *Hexagon through origin*	$(10\bar{1}0)$ $(\bar{1}100)$ $(0\bar{1}10)$ $(\bar{1}010)$ $(1\bar{1}00)$ $(01\bar{1}0)$
6	*b*	*m*2*m*	$x, 0, 0$ $0, x, 0$ $\bar{x}, \bar{x}, 0$ $\bar{x}, 0, 0$ $0, \bar{x}, 0$ $x, x, 0$	Hexagonal prism *Hexagon through origin*	$(11\bar{2}0)$ $(\bar{2}110)$ $(1\bar{2}10)$ $(\bar{1}\bar{1}20)$ $(2\bar{1}\bar{1}0)$ $(\bar{1}2\bar{1}0)$
2	*a*	6*mm*	$0, 0, z$ $0, 0, \bar{z}$	Pinacoid or parallelohedron *Line segment through origin*	(0001) $(000\bar{1})$
1	*o*	6*mmm*	$0, 0, 0$	*Point in origin*	

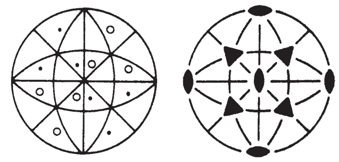
Symmetry of special projections

Along [001]	Along [100]	Along [210]
6*mm*	2*mm*	2*mm*

Table 3.2.3.2 (continued)

CUBIC SYSTEM

23 T



12	c	1	x,y,z $\bar{x},\bar{y},z$ $\bar{x},y,\bar{z}$ $x,\bar{y},\bar{z}$ z,x,y $z,\bar{x},\bar{y}$ $\bar{z},\bar{x},y$ $\bar{z},x,\bar{y}$ y,z,x $\bar{y},z,\bar{x}$ $y,\bar{z},\bar{x}$ $\bar{y},\bar{z},x$	Pentagon-tritetrahedron or tetartoid or tetrahedral pentagon-dodecahedron *Snub tetrahedron* (= *pentagon-tritetrahedron* + *two tetrahedra*)	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$ (lhk) $(l\bar{h}\bar{k})$ $(\bar{l}\bar{h}k)$ $(\bar{l}h\bar{k})$ (klh) $(\bar{k}l\bar{h})$ $(k\bar{l}\bar{h})$ $(\bar{k}\bar{l}h)$
				{ Trigon-tritetrahedron or tristetrahedron (for $\lvert h\rvert < \lvert l\rvert$) *Tetrahedron truncated by tetrahedron* (*for* $\lvert x\rvert < \lvert z\rvert$) Tetragon-tritetrahedron or deltohedron or deltoid-dodecahedron (for $\lvert h\rvert > \lvert l\rvert$) *Cube* & *two tetrahedra* (*for* $\lvert x\rvert > \lvert z\rvert$) }	(hhl) $(\bar{h}\bar{h}l)$ $(\bar{h}h\bar{l})$ $(h\bar{h}\bar{l})$ (lhh) $(l\bar{h}\bar{h})$ $(\bar{l}\bar{h}h)$ $(\bar{l}h\bar{h})$ (hlh) $(\bar{h}l\bar{h})$ $(h\bar{l}\bar{h})$ $(\bar{h}\bar{l}h)$
				Pentagon-dodecahedron or dihexahedron or pyritohedron *Irregular icosahedron* (= *pentagon-dodecahedron* + *octahedron*)	$(0kl)$ $(0\bar{k}l)$ $(0k\bar{l})$ $(0\bar{k}\bar{l})$ $(l0k)$ $(l0\bar{k})$ $(\bar{l}0k)$ $(\bar{l}0\bar{k})$ $(kl0)$ $(\bar{k}l0)$ $(k\bar{l}0)$ $(\bar{k}\bar{l}0)$
				Rhomb-dodecahedron *Cuboctahedron*	(011) $(0\bar{1}1)$ $(01\bar{1})$ $(0\bar{1}\bar{1})$ (101) $(10\bar{1})$ $(\bar{1}01)$ $(\bar{1}0\bar{1})$ (110) $(\bar{1}10)$ $(1\bar{1}0)$ $(\bar{1}\bar{1}0)$
6	b	2..	$x,0,0$ $\bar{x},0,0$ $0,x,0$ $0,\bar{x},0$ $0,0,x$ $0,0,\bar{x}$	Cube or hexahedron *Octahedron*	(100) $(\bar{1}00)$ (010) $(0\bar{1}0)$ (001) $(00\bar{1})$
4	a	.3.	x,x,x $\bar{x},\bar{x},x$ $\bar{x},x,\bar{x}$ $x,\bar{x},\bar{x}$	Tetrahedron *Tetrahedron*	(111) $(\bar{1}\bar{1}1)$ $(\bar{1}1\bar{1})$ $(1\bar{1}\bar{1})$ or $(\bar{1}\bar{1}\bar{1})$ $(11\bar{1})$ $(1\bar{1}1)$ $(\bar{1}11)$
1	o	23.	$0,0,0$	*Point in origin*	

Symmetry of special projections

Along [001]	Along [111]	Along [110]
$2mm$	3	m

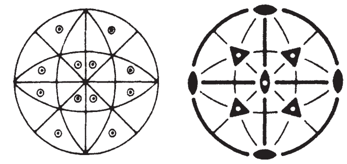
Table 3.2.3.2 (continued)

CUBIC SYSTEM (*cont.*)

$m\bar{3}$

$\frac{2}{m}\bar{3}$

T_h



24	*d*	1	x,y,z $\bar{x},\bar{y},z$ $\bar{x},y,\bar{z}$ $x,\bar{y},\bar{z}$ z,x,y $z,\bar{x},\bar{y}$ $\bar{z},\bar{x},y$ $\bar{z},x,\bar{y}$ y,z,x $\bar{y},z,\bar{x}$ $y,\bar{z},\bar{x}$ $\bar{y},\bar{z},x$ $\bar{x},\bar{y},\bar{z}$ $x,y,\bar{z}$ $x,\bar{y},z$ $\bar{x},y,z$ $\bar{z},\bar{x},\bar{y}$ $\bar{z},x,y$ $z,x,\bar{y}$ $z,\bar{x},y$ $\bar{y},\bar{z},\bar{x}$ $y,\bar{z},x$ $\bar{y},z,x$ $y,z,\bar{x}$	Didodecahedron or diploid or dyakisdodecahedron *Cube* & *octahedron* & *pentagon-dodecahedron*	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$ (lhk) $(l\bar{h}\bar{k})$ $(\bar{l}\bar{h}k)$ $(\bar{l}h\bar{k})$ (klh) $(\bar{k}l\bar{h})$ $(k\bar{l}\bar{h})$ $(\bar{k}\bar{l}h)$ $(\bar{h}\bar{k}\bar{l})$ $(hk\bar{l})$ $(h\bar{k}l)$ $(\bar{h}kl)$ $(\bar{l}\bar{h}\bar{k})$ $(\bar{l}hk)$ $(lh\bar{k})$ $(l\bar{h}k)$ $(\bar{k}\bar{l}\bar{h})$ $(k\bar{l}h)$ $(\bar{k}lh)$ $(kl\bar{h})$
				Tetragon-trioctahedron or trapezohedron or deltoid-icositetrahedron (for $\|h\| < \|l\|$) *Cube* & *octahedron* & *rhomb-dodecahedron* (*for* $\|x\| < \|z\|$) Trigon-trioctahedron or trisoctahedron (for $\|h\| > \|l\|$) *Cube truncated by octahedron* (*for* $\|x\| > \|z\|$)	(hhl) $(\bar{h}\bar{h}l)$ $(\bar{h}h\bar{l})$ $(h\bar{h}\bar{l})$ (lhh) $(l\bar{h}\bar{h})$ $(\bar{l}\bar{h}h)$ $(\bar{l}h\bar{h})$ (hlh) $(\bar{h}l\bar{h})$ $(h\bar{l}\bar{h})$ $(\bar{h}\bar{l}h)$ $(\bar{h}\bar{h}\bar{l})$ $(hh\bar{l})$ $(h\bar{h}l)$ $(\bar{h}hl)$ $(\bar{l}\bar{h}\bar{h})$ $(\bar{l}hh)$ $(lh\bar{h})$ $(l\bar{h}h)$ $(\bar{h}\bar{l}\bar{h})$ $(h\bar{l}h)$ $(\bar{h}lh)$ $(hl\bar{h})$
12	*c*	*m*..	$0,y,z$ $0,\bar{y},z$ $0,y,\bar{z}$ $0,\bar{y},\bar{z}$ $z,0,y$ $z,0,\bar{y}$ $\bar{z},0,y$ $\bar{z},0,\bar{y}$ $y,z,0$ $\bar{y},z,0$ $y,\bar{z},0$ $\bar{y},\bar{z},0$	Pentagon-dodecahedron or dihexahedron or pyritohedron *Irregular icosahedron* (= *pentagon-dodecahedron* + *octahedron*)	$(0kl)$ $(0\bar{k}l)$ $(0k\bar{l})$ $(0\bar{k}\bar{l})$ $(l0k)$ $(l0\bar{k})$ $(\bar{l}0k)$ $(\bar{l}0\bar{k})$ $(kl0)$ $(\bar{k}l0)$ $(k\bar{l}0)$ $(\bar{k}\bar{l}0)$
				Rhomb-dodecahedron *Cuboctahedron*	(011) $(0\bar{1}1)$ $(01\bar{1})$ $(0\bar{1}\bar{1})$ (101) $(10\bar{1})$ $(\bar{1}01)$ $(\bar{1}0\bar{1})$ (110) $(\bar{1}10)$ $(1\bar{1}0)$ $(\bar{1}\bar{1}0)$
8	*b*	.3.	x,x,x $\bar{x},\bar{x},x$ $\bar{x},x,\bar{x}$ $x,\bar{x},\bar{x}$ $\bar{x},\bar{x},\bar{x}$ $x,x,\bar{x}$ $x,\bar{x},x$ $\bar{x},x,x$	Octahedron *Cube*	(111) $(\bar{1}\bar{1}1)$ $(\bar{1}1\bar{1})$ $(1\bar{1}\bar{1})$ $(\bar{1}\bar{1}\bar{1})$ $(11\bar{1})$ $(1\bar{1}1)$ $(\bar{1}11)$
6	*a*	2*mm*..	$x,0,0$ $\bar{x},0,0$ $0,x,0$ $0,\bar{x},0$ $0,0,x$ $0,0,\bar{x}$	Cube or hexahedron *Octahedron*	(100) $(\bar{1}00)$ (010) $(0\bar{1}0)$ (001) $(00\bar{1})$
1	*o*	$m\bar{3}$.	$0,0,0$	*Point in origin*	

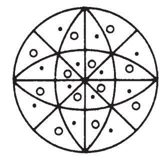
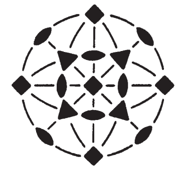
Symmetry of special projections

Along [001]	Along [111]	Along [110]
2*mm*	6	2*mm*

Table 3.2.3.2 (continued)

CUBIC SYSTEM (*cont.*)

432 *O*

Multiplicity	Wyckoff letter	Site symmetry	Coordinates	Name of crystal form (*point form*)	Miller indices
24	*d*	1	x,y,z $\bar{x},\bar{y},z$ $\bar{x},y,\bar{z}$ $x,\bar{y},\bar{z}$	Pentagon-trioctahedron	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$
			z,x,y $z,\bar{x},\bar{y}$ $\bar{z},\bar{x},y$ $\bar{z},x,\bar{y}$	or gyroid	(lhk) $(l\bar{h}\bar{k})$ $(\bar{l}\bar{h}k)$ $(\bar{l}h\bar{k})$
			y,z,x $\bar{y},z,\bar{x}$ $y,\bar{z},\bar{x}$ $\bar{y},\bar{z},x$	or pentagon-icositetrahedron	(klh) $(\bar{k}l\bar{h})$ $(k\bar{l}\bar{h})$ $(\bar{k}\bar{l}h)$
				Snub cube (= *cube* +	
			$y,x,\bar{z}$ $\bar{y},\bar{x},\bar{z}$ $y,\bar{x},z$ $\bar{y},x,z$	*octahedron* + *pentagon-*	$(kh\bar{l})$ $(\bar{k}\bar{h}\bar{l})$ $(k\bar{h}l)$ $(\bar{k}hl)$
			$x,z,\bar{y}$ $\bar{x},z,y$ $\bar{x},\bar{z},\bar{y}$ $x,\bar{z},y$	*trioctahedron*)	$(hl\bar{k})$ $(\bar{h}lk)$ $(\bar{h}\bar{l}\bar{k})$ $(h\bar{l}k)$
			$z,y,\bar{x}$ $z,\bar{y},x$ $\bar{z},y,x$ $\bar{z},\bar{y},\bar{x}$		$(lk\bar{h})$ $(l\bar{k}h)$ $(\bar{l}kh)$ $(\bar{l}\bar{k}\bar{h})$
				Tetragon-trioctahedron or trapezohedron or deltoid-icositetrahedron (for $\|h\| < \|l\|$) *Cube* & *octahedron* & *rhomb-dodecahedron* (*for* $\|x\| < \|z\|$)	(hhl) $(\bar{h}\bar{h}l)$ $(\bar{h}h\bar{l})$ $(h\bar{h}\bar{l})$
					(lhh) $(l\bar{h}\bar{h})$ $(\bar{l}\bar{h}h)$ $(\bar{l}h\bar{h})$
					(hlh) $(\bar{h}l\bar{h})$ $(h\bar{l}\bar{h})$ $(\bar{h}\bar{l}h)$
				Trigon-trioctahedron or trisoctahedron (for $\|h\| > \|l\|$) *Cube truncated by octahedron* (*for* $\|x\| > \|z\|$)	$(hh\bar{l})$ $(\bar{h}\bar{h}\bar{l})$ $(h\bar{h}l)$ $(\bar{h}hl)$
					$(hl\bar{h})$ $(\bar{h}lh)$ $(\bar{h}\bar{l}\bar{h})$ $(h\bar{l}h)$
					$(lh\bar{h})$ $(l\bar{h}h)$ $(\bar{l}hh)$ $(\bar{l}\bar{h}\bar{h})$
					$(0kl)$ $(0\bar{k}l)$ $(0k\bar{l})$ $(0\bar{k}\bar{l})$
					$(l0k)$ $(l0\bar{k})$ $(\bar{l}0k)$ $(\bar{l}0\bar{k})$
				Tetrahexahedron or tetrakishexahedron *Octahedron truncated by cube*	$(kl0)$ $(\bar{k}l0)$ $(k\bar{l}0)$ $(\bar{k}\bar{l}0)$
					$(k0\bar{l})$ $(\bar{k}0\bar{l})$ $(k0l)$ $(\bar{k}0l)$
					$(0l\bar{k})$ $(0lk)$ $(0\bar{l}\bar{k})$ $(0\bar{l}k)$
					$(lk0)$ $(l\bar{k}0)$ $(\bar{l}k0)$ $(\bar{l}\bar{k}0)$
12	*c*	..2	$0,y,y$ $0,\bar{y},y$ $0,y,\bar{y}$ $0,\bar{y},\bar{y}$	Rhomb-dodecahedron	(011) $(0\bar{1}1)$ $(01\bar{1})$ $(0\bar{1}\bar{1})$
			$y,0,y$ $y,0,\bar{y}$ $\bar{y},0,y$ $\bar{y},0,\bar{y}$	*Cuboctahedron*	(101) $(10\bar{1})$ $(\bar{1}01)$ $(\bar{1}0\bar{1})$
			$y,y,0$ $\bar{y},y,0$ $y,\bar{y},0$ $\bar{y},\bar{y},0$		(110) $(\bar{1}10)$ $(1\bar{1}0)$ $(\bar{1}\bar{1}0)$
8	*b*	.3.	x,x,x $\bar{x},\bar{x},x$ $\bar{x},x,\bar{x}$ $x,\bar{x},\bar{x}$	Octahedron	(111) $(\bar{1}\bar{1}1)$ $(\bar{1}1\bar{1})$ $(1\bar{1}\bar{1})$
			$x,x,\bar{x}$ $\bar{x},\bar{x},\bar{x}$ $x,\bar{x},x$ $\bar{x},x,x$	*Cube*	$(11\bar{1})$ $(\bar{1}\bar{1}\bar{1})$ $(1\bar{1}1)$ $(\bar{1}11)$
6	*a*	4..	$x,0,0$ $\bar{x},0,0$	Cube or hexahedron	(100) $(\bar{1}00)$
			$0,x,0$ $0,\bar{x},0$	*Octahedron*	(010) $(0\bar{1}0)$
			$0,0,x$ $0,0,\bar{x}$		(001) $(00\bar{1})$
1	*o*	432	$0,0,0$	*Point in origin*	

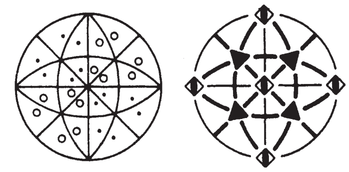
Symmetry of special projections

Along [001]	Along [111]	Along [110]
4*mm*	3*m*	2*mm*

Table 3.2.3.2 (continued)

CUBIC SYSTEM (*cont.*)

$\bar{4}3m$ T_d



24	*d*	1	x,y,z $\bar{x},\bar{y},z$ $\bar{x},y,\bar{z}$ $x,\bar{y},\bar{z}$ z,x,y $z,\bar{x},\bar{y}$ $\bar{z},\bar{x},y$ $\bar{z},x,\bar{y}$ y,z,x $\bar{y},z,\bar{x}$ $y,\bar{z},\bar{x}$ $\bar{y},\bar{z},x$ y,x,z $\bar{y},\bar{x},z$ $y,\bar{x},\bar{z}$ $\bar{y},x,\bar{z}$ x,z,y $\bar{x},z,\bar{y}$ $\bar{x},\bar{z},y$ $x,\bar{z},\bar{y}$ z,y,x $z,\bar{y},\bar{x}$ $\bar{z},y,\bar{x}$ $\bar{z},\bar{y},x$	Hexatetrahedron or hexakistetrahedron *Cube truncated by two tetrahedra*	(hkl) $(\bar{h}\bar{k}l)$ $(\bar{h}k\bar{l})$ $(h\bar{k}\bar{l})$ (lhk) $(l\bar{h}\bar{k})$ $(\bar{l}\bar{h}k)$ $(\bar{l}h\bar{k})$ (klh) $(\bar{k}l\bar{h})$ $(k\bar{l}\bar{h})$ $(\bar{k}\bar{l}h)$ (khl) $(\bar{k}\bar{h}l)$ $(k\bar{h}\bar{l})$ $(\bar{k}h\bar{l})$ (hlk) $(\bar{h}l\bar{k})$ $(\bar{h}\bar{l}k)$ $(h\bar{l}\bar{k})$ (lkh) $(l\bar{k}\bar{h})$ $(\bar{l}k\bar{h})$ $(\bar{l}\bar{k}h)$
				Tetrahexahedron or tetrakishexahedron *Octahedron truncated by cube*	$(0kl)$ $(0\bar{k}l)$ $(0k\bar{l})$ $(0\bar{k}\bar{l})$ $(l0k)$ $(l0\bar{k})$ $(\bar{l}0k)$ $(\bar{l}0\bar{k})$ $(kl0)$ $(\bar{k}l0)$ $(k\bar{l}0)$ $(\bar{k}\bar{l}0)$ $(k0l)$ $(\bar{k}0l)$ $(k0\bar{l})$ $(\bar{k}0\bar{l})$ $(0lk)$ $(0l\bar{k})$ $(0\bar{l}k)$ $(0\bar{l}\bar{k})$ $(lk0)$ $(l\bar{k}0)$ $(\bar{l}k0)$ $(\bar{l}\bar{k}0)$
12	*c*	..*m*	x,x,z $\bar{x},\bar{x},z$ $\bar{x},x,\bar{z}$ $x,\bar{x},\bar{z}$ z,x,x $z,\bar{x},\bar{x}$ $\bar{z},\bar{x},x$ $\bar{z},x,\bar{x}$ x,z,x $\bar{x},z,\bar{x}$ $x,\bar{z},\bar{x}$ $\bar{x},\bar{z},x$	Trigon-tritetrahedron or tristetrahedron (for $\vert h\vert < \vert l\vert$) *Tetrahedron truncated by tetrahedron* *(for* $\vert x\vert < \vert z\vert$*)* Tetragon-tritetrahedron or deltohedron or deltoid-dodecahedron (for $\vert h\vert > \vert l\vert$) *Cube & two tetrahedra* *(for* $\vert x\vert > \vert z\vert$*)*	(hhl) $(\bar{h}\bar{h}l)$ $(\bar{h}h\bar{l})$ $(h\bar{h}\bar{l})$ (lhh) $(l\bar{h}\bar{h})$ $(\bar{l}\bar{h}h)$ $(\bar{l}h\bar{h})$ (hlh) $(\bar{h}l\bar{h})$ $(h\bar{l}\bar{h})$ $(\bar{h}\bar{l}h)$
				Rhomb-dodecahedron *Cuboctahedron*	(110) $(\bar{1}\bar{1}0)$ $(\bar{1}10)$ $(1\bar{1}0)$ (011) $(0\bar{1}\bar{1})$ $(0\bar{1}1)$ $(01\bar{1})$ (101) $(\bar{1}0\bar{1})$ $(10\bar{1})$ $(\bar{1}01)$
6	*b*	2.*mm*	$x,0,0$ $\bar{x},0,0$ $0,x,0$ $0,\bar{x},0$ $0,0,x$ $0,0,\bar{x}$	Cube or hexahedron *Octahedron*	(100) $(\bar{1}00)$ (010) $(0\bar{1}0)$ (001) $(00\bar{1})$
4	*a*	.3*m*	x,x,x $\bar{x},\bar{x},x$ $\bar{x},x,\bar{x}$ $x,\bar{x},\bar{x}$	Tetrahedron *Tetrahedron*	(111) $(\bar{1}\bar{1}1)$ $(\bar{1}1\bar{1})$ $(1\bar{1}\bar{1})$ or $(\bar{1}\bar{1}\bar{1})$ $(11\bar{1})$ $(1\bar{1}1)$ $(\bar{1}11)$
1	*o*	$\bar{4}3m$	$0,0,0$	*Point in origin*	

Symmetry of special projections

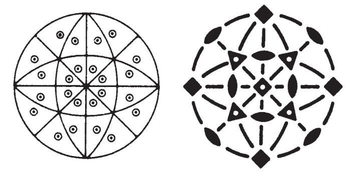
Along [001]	Along [111]	Along [110]
$4mm$	$3m$	m

Table 3.2.3.2 (continued)

CUBIC SYSTEM (*cont.*)

$m\bar{3}m$

$\frac{4}{m}\bar{3}\frac{2}{m}$ $\qquad O_h$



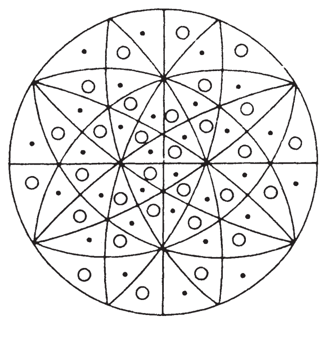
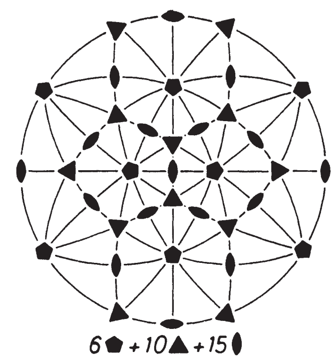
48	*f*	1	x, y, z	$\bar{x}, \bar{y}, z$	$\bar{x}, y, \bar{z}$	$x, \bar{y}, \bar{z}$	Hexaoctahedron	(hkl)	$(\bar{h}\bar{k}l)$	$(\bar{h}k\bar{l})$	$(h\bar{k}\bar{l})$
			z, x, y	$z, \bar{x}, \bar{y}$	$\bar{z}, \bar{x}, y$	$\bar{z}, x, \bar{y}$	or hexakisoctahedron	(lhk)	$(l\bar{h}\bar{k})$	$(\bar{l}\bar{h}k)$	$(\bar{l}h\bar{k})$
			y, z, x	$\bar{y}, z, \bar{x}$	$y, \bar{z}, \bar{x}$	$\bar{y}, \bar{z}, x$	*Cube truncated by*	(klh)	$(\bar{k}l\bar{h})$	$(k\bar{l}\bar{h})$	$(\bar{k}\bar{l}h)$
							octahedron and by rhomb-				
			$y, x, \bar{z}$	$\bar{y}, \bar{x}, \bar{z}$	$y, \bar{x}, z$	$\bar{y}, x, z$	*dodecahedron*	$(kh\bar{l})$	$(\bar{k}\bar{h}\bar{l})$	$(k\bar{h}l)$	$(\bar{k}hl)$
			$x, z, \bar{y}$	$\bar{x}, z, y$	$\bar{x}, \bar{z}, \bar{y}$	$x, \bar{z}, y$		$(hl\bar{k})$	$(\bar{h}lk)$	$(\bar{h}\bar{l}\bar{k})$	$(h\bar{l}k)$
			$z, y, \bar{x}$	$z, \bar{y}, x$	$\bar{z}, y, x$	$\bar{z}, \bar{y}, \bar{x}$		$(lk\bar{h})$	$(l\bar{k}h)$	$(\bar{l}kh)$	$(\bar{l}\bar{k}\bar{h})$
			$\bar{x}, \bar{y}, \bar{z}$	$x, y, \bar{z}$	$x, \bar{y}, z$	$\bar{x}, y, z$		$(\bar{h}\bar{k}\bar{l})$	$(hk\bar{l})$	$(h\bar{k}l)$	$(\bar{h}kl)$
			$\bar{z}, \bar{x}, \bar{y}$	$\bar{z}, x, y$	$z, x, \bar{y}$	$z, \bar{x}, y$		$(\bar{l}\bar{h}\bar{k})$	$(\bar{l}hk)$	$(lh\bar{k})$	$(l\bar{h}k)$
			$\bar{y}, \bar{z}, \bar{x}$	$y, \bar{z}, x$	$\bar{y}, z, x$	$y, z, \bar{x}$		$(\bar{k}\bar{l}\bar{h})$	$(k\bar{l}h)$	$(\bar{k}lh)$	$(kl\bar{h})$
			$\bar{y}, \bar{x}, z$	y, x, z	$\bar{y}, x, \bar{z}$	$y, \bar{x}, \bar{z}$		$(\bar{k}\bar{h}l)$	(khl)	$(\bar{k}h\bar{l})$	$(k\bar{h}\bar{l})$
			$\bar{x}, \bar{z}, y$	$x, \bar{z}, \bar{y}$	x, z, y	$\bar{x}, z, \bar{y}$		$(\bar{h}\bar{l}k)$	$(h\bar{l}\bar{k})$	(hlk)	$(\bar{h}l\bar{k})$
			$\bar{z}, \bar{y}, x$	$\bar{z}, y, \bar{x}$	$z, \bar{y}, \bar{x}$	z, y, x		$(\bar{l}\bar{k}h)$	$(\bar{l}k\bar{h})$	$(l\bar{k}\bar{h})$	(lkh)
							Tetragon-trioctahedron				
							or trapezohedron				
							or deltoid-icositetrahedron				
24	*e*	*..m*	x, x, z	$\bar{x}, \bar{x}, z$	$\bar{x}, x, \bar{z}$	$x, \bar{x}, \bar{z}$	(for $\|h\| < \|l\|$)	(hhl)	$(\bar{h}\bar{h}l)$	$(\bar{h}h\bar{l})$	$(h\bar{h}\bar{l})$
			z, x, x	$z, \bar{x}, \bar{x}$	$\bar{z}, \bar{x}, x$	$\bar{z}, x, \bar{x}$	*Cube & octahedron & rhomb-*	(lhh)	$(l\bar{h}\bar{h})$	$(\bar{l}\bar{h}h)$	$(\bar{l}h\bar{h})$
			x, z, x	$\bar{x}, z, \bar{x}$	$x, \bar{z}, \bar{x}$	$\bar{x}, \bar{z}, x$	*dodecahedron*	(hlh)	$(\bar{h}l\bar{h})$	$(h\bar{l}\bar{h})$	$(\bar{h}\bar{l}h)$
							(for $\|x\| < \|z\|$*)*				
			$x, x, \bar{z}$	$\bar{x}, \bar{x}, \bar{z}$	$x, \bar{x}, z$	$\bar{x}, x, z$		$(hh\bar{l})$	$(\bar{h}\bar{h}\bar{l})$	$(h\bar{h}l)$	$(\bar{h}hl)$
			$x, z, \bar{x}$	$\bar{x}, z, x$	$\bar{x}, \bar{z}, \bar{x}$	$x, \bar{z}, x$	Trigon-trioctahedron	$(hl\bar{h})$	$(\bar{h}lh)$	$(\bar{h}\bar{l}\bar{h})$	$(h\bar{l}h)$
			$z, x, \bar{x}$	$z, \bar{x}, x$	$\bar{z}, x, x$	$\bar{z}, \bar{x}, \bar{x}$	or trisoctahedron	$(lh\bar{h})$	$(l\bar{h}h)$	$(\bar{l}hh)$	$(\bar{l}\bar{h}\bar{h})$
							(for $\|h\| > \|l\|$)				
							Cube truncated by				
							octahedron				
							(for $\|x\| > \|z\|$*)*				
24	*d*	*m..*	$0, y, z$	$0, \bar{y}, z$	$0, y, \bar{z}$	$0, \bar{y}, \bar{z}$		$(0kl)$	$(0\bar{k}l)$	$(0k\bar{l})$	$(0\bar{k}\bar{l})$
			$z, 0, y$	$z, 0, \bar{y}$	$\bar{z}, 0, y$	$\bar{z}, 0, \bar{y}$	Tetrahexahedron	$(l0k)$	$(l0\bar{k})$	$(\bar{l}0k)$	$(\bar{l}0\bar{k})$
			$y, z, 0$	$\bar{y}, z, 0$	$y, \bar{z}, 0$	$\bar{y}, \bar{z}, 0$	or tetrakishexahedron	$(kl0)$	$(\bar{k}l0)$	$(k\bar{l}0)$	$(\bar{k}\bar{l}0)$
							Octahedron truncated				
			$y, 0, \bar{z}$	$\bar{y}, 0, \bar{z}$	$y, 0, z$	$\bar{y}, 0, z$	*by cube*	$(k0\bar{l})$	$(\bar{k}0\bar{l})$	$(k0l)$	$(\bar{k}0l)$
			$0, z, \bar{y}$	$0, z, y$	$0, \bar{z}, \bar{y}$	$0, \bar{z}, y$		$(0l\bar{k})$	$(0lk)$	$(0\bar{l}\bar{k})$	$(0\bar{l}k)$
			$z, y, 0$	$z, \bar{y}, 0$	$\bar{z}, y, 0$	$\bar{z}, \bar{y}, 0$		$(lk0)$	$(l\bar{k}0)$	$(\bar{l}k0)$	$(\bar{l}\bar{k}0)$
12	*c*	*m.m*2	$0, y, y$	$0, \bar{y}, y$	$0, y, \bar{y}$	$0, \bar{y}, \bar{y}$	Rhomb-dodecahedron	(011)	$(0\bar{1}1)$	$(01\bar{1})$	$(0\bar{1}\bar{1})$
			$y, 0, y$	$y, 0, \bar{y}$	$\bar{y}, 0, y$	$\bar{y}, 0, \bar{y}$	*Cuboctahedron*	(101)	$(10\bar{1})$	$(\bar{1}01)$	$(\bar{1}0\bar{1})$
			$y, y, 0$	$\bar{y}, y, 0$	$y, \bar{y}, 0$	$\bar{y}, \bar{y}, 0$		(110)	$(\bar{1}10)$	$(1\bar{1}0)$	$(\bar{1}\bar{1}0)$
8	*b*	*.3m*	x, x, x	$\bar{x}, \bar{x}, x$	$\bar{x}, x, \bar{x}$	$x, \bar{x}, \bar{x}$	Octahedron	(111)	$(\bar{1}\bar{1}1)$	$(\bar{1}1\bar{1})$	$(1\bar{1}\bar{1})$
			$x, x, \bar{x}$	$\bar{x}, \bar{x}, \bar{x}$	$x, \bar{x}, x$	$\bar{x}, x, x$	*Cube*	$(11\bar{1})$	$(\bar{1}\bar{1}\bar{1})$	$(1\bar{1}1)$	$(\bar{1}11)$
6	*a*	4*m.m*	$x, 0, 0$	$\bar{x}, 0, 0$			Cube or hexahedron	(100)	$(\bar{1}00)$		
			$0, x, 0$	$0, \bar{x}, 0$			*Octahedron*	(010)	$(0\bar{1}0)$		
			$0, 0, x$	$0, 0, \bar{x}$				(001)	$(00\bar{1})$		
1	*o*	$m\bar{3}m$	$0, 0, 0$				*Point in origin*				

Symmetry of special projections

Along [001]	Along [111]	Along [110]
4*mm*	6*mm*	2*mm*

Table 3.2.3.3
The two icosahedral point groups

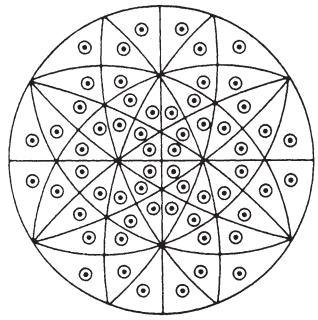
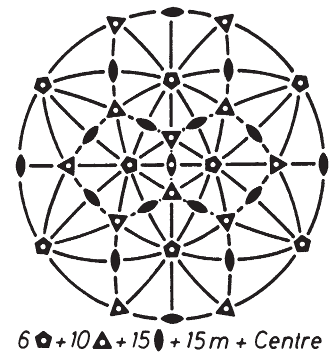
Each point group is specified by its Hermann–Mauguin and Schoenflies symbol. For each point group, the stereographic projections show (on the left) the general position and (on the right) the symmetry elements.
The list of the Wyckoff positions includes:
Columns 1 to 3: multiplicity, Wyckoff letter, oriented site-symmetry symbol;
Under the left stereographic projection: face forms (in roman type) and point forms (in italics), corresponding to the values for the Miller indices and coordinates listed in the last column; only 'initial' Miller indices and coordinates are given (see text).

235	*I*			
60	*d*	1	Pentagon-hexecontahedron *Snub pentagon-dodecahedron (= pentagon-dodecahedron + icosahedron + pentagon-hexecontahedron)*	(hkl) x, y, z
			Trisicosahedron *Pentagon-dodecahedron truncated by icosahedron* (poles between axes 2 and 3)	($0kl$) with $\|l\| < 0.382\|k\|$ $0, y, z$ *with* $\|z\| < 0.382\|y\|$
			Deltoid-hexecontahedron *Rhomb-triacontahedron* & *pentagon-dodecahedron* & *icosahedron* (poles between axes 3 and 5)	($0kl$) with $0.382\|k\| < \|l\| < 1.618\|k\|$ $0, y, z$ *with* $0.382\|y\| < \|z\| < 1.618\|y\|$
			Pentakisdodecahedron *Icosahedron truncated by* *pentagon-dodecahedron* (poles between axes 5 and 2)	($0kl$) with $\|l\| > 1.618\|k\|$ $0, y, z$ *with* $\|z\| > 1.618\|y\|$
30	*c*	2..	Rhomb-triacontahedron *Icosadodecahedron (= pentagon-dodecahedron* & *icosahedron)*	(100) $x, 0, 0$
20	*b*	.3.	Regular icosahedron *Regular pentagon-dodecahedron*	(111) x, x, x
12	*a*	..5	Regular pentagon-dodecahedron *Regular icosahedron*	(01τ) $0, y, \tau y$ } with $\tau = \frac{1}{2}(\sqrt{5}+1) = 1.618$
1	*o*	235	*Point in origin*	$0, 0, 0$

Symmetry of special projections

Along [001]	Along [111]	Along [$1\tau 0$]
$2mm$	$3m$	$5m$

Table 3.2.3.3 (continued)

$m\bar{3}\bar{5}$ $\frac{2}{m}\bar{3}\bar{5}$	I_h			
120	*e*	1	Hecatonicosahedron or hexaicosahedron *Pentagon-dodecahedron truncated by icosahedron and by rhomb-triacontahedron*	(*hkl*) *x*, *y*, *z*
60	*d*	*m*..	Trisicosahedron *Pentagon-dodecahedron truncated by icosahedron* (poles between axes 2 and $\bar{3}$)	$(0kl)$ with $\lvert l\rvert < 0.382\lvert k\rvert$ $0, y, z$ *with* $\lvert z\rvert < 0.382\lvert y\rvert$
			Deltoid-hexecontahedron *Rhomb-triacontahedron* & *pentagon-dodecahedron* & *icosahedron* (poles between axes $\bar{3}$ and $\bar{5}$)	$(0kl)$ with $0.382\lvert k\rvert < \lvert l\rvert < 1.618\lvert k\rvert$ $0, y, z$ *with* $0.382\lvert y\rvert < \lvert z\rvert < 1.618\lvert y\rvert$
			Pentakisdodecahedron *Icosahedron truncated by pentagon-dodecahedron* (poles between axes $\bar{5}$ and 2)	$(0kl)$ with $\lvert l\rvert > 1.618\lvert k\rvert$ $0, y, z$ *with* $\lvert z\rvert > 1.618\lvert y\rvert$
30	*c*	2*mm*..	Rhomb-triacontahedron *Icosadodecahedron* (= *pentagon-dodecahedron* & *icosahedron*)	(100) *x*, 0, 0
20	*b*	3*m* (*m*3.)	Regular icosahedron *Regular pentagon-dodecahedron*	(111) *x*, *x*, *x*
12	*a*	5*m* (*m*.5)	Regular pentagon-dodecahedron *Regular icosahedron*	(01τ), $0, y, \tau y$ with $\tau = \frac{1}{2}(\sqrt{5}+1) = 1.618$
1	*o*	$2/m\bar{3}\bar{5}$	*Point in origin*	0, 0, 0

Symmetry of special projections

Along [001]	Along [111]	Along [1τ0]
2*mm*	6*mm*	10*mm*

references