No. 192 $P6/mcc$ D^2_{6h}

$$\mathcal{G} = P6\frac{6}{m}\frac{2}{c}\frac{2}{c}$$

Orientation orbit $(hkil)$	Conventional basis of the scanning group $\mathbf{a}'$	$\mathbf{b}'$	$\mathbf{d}$	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(0001)	**a**	**b**	**c**	$P6/mcc$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p6/m$	L75
					$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p622$	L76
					$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$p6$	L73
$(01\bar{1}0)$	**c**	**a**	$\mathbf{a}+2\mathbf{b}$	$Amaa$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$pmaa$	L38
$(\bar{1}010)$	**c**	**b**	$-(2\mathbf{a}+\mathbf{b})$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$pman$ $(\mathbf{b}'/4)$	L42
$(1\bar{1}00)$	**c**	$-(\mathbf{a}+\mathbf{b})$	$(\mathbf{a}-\mathbf{b})$		$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$pma2$ $(\mathbf{a}'/4)$	L24
$(\bar{1}2\bar{1}0)$	**c**	$2\mathbf{a}+\mathbf{b}$	**b**	$Amaa$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$pmaa$	L38
$(\bar{1}\bar{1}20)$	**c**	$(\mathbf{b}-\mathbf{a})$	$-(\mathbf{a}+\mathbf{b})$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$pman$ $(\mathbf{b}'/4)$	L42
$(2\bar{1}\bar{1}0)$	**c**	$-(\mathbf{a}+2\mathbf{b})$	**a**		$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$pma2$ $(\mathbf{a}'/4)$	L24

No. 193 $P6_3/mcm$ D^3_{6h}

$$\mathcal{G} = P\frac{6_3}{m}\frac{2}{c}\frac{2}{m}$$

Orientation orbit $(hkil)$	Conventional basis of the scanning group $\mathbf{a}'$	$\mathbf{b}'$	$\mathbf{d}$	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(0001)	**a**	**b**	**c**	$P6_3/mcm$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p\bar{3}1m$	L71
					$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p\bar{6}2m$	L79
					$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$p31m$	L70
$(01\bar{1}0)$	**c**	**a**	$\mathbf{a}+2\mathbf{b}$	$Amam$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$pmam$	L40
$(\bar{1}010)$	**c**	**b**	$-(2\mathbf{a}+\mathbf{b})$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$pmab$ $(\mathbf{b}'/4)$	L45
$(1\bar{1}00)$	**c**	$-(\mathbf{a}+\mathbf{b})$	$(\mathbf{a}-\mathbf{b})$		$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$pma2$	L24
$(\bar{1}2\bar{1}0)$	**c**	$2\mathbf{a}+\mathbf{b}$	**b**	$Amma$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$pmma$	L41
$(\bar{1}\bar{1}20)$	**c**	$(\mathbf{b}-\mathbf{a})$	$-(\mathbf{a}+\mathbf{b})$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$pmmn$ $(\mathbf{b}'/4)$	L46
$(2\bar{1}\bar{1}0)$	**c**	$-(\mathbf{a}+2\mathbf{b})$	**a**		$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$pmm2$ $(\mathbf{a}'/4)$	L23

No. 194 $P6_3/mmc$ D^4_{6h}

$$\mathcal{G} = P\frac{6_3}{m}\frac{2}{m}\frac{2}{c}$$

Orientation orbit $(hkil)$	Conventional basis of the scanning group $\mathbf{a}'$	$\mathbf{b}'$	$\mathbf{d}$	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(0001)	**a**	**b**	**c**	$P6_3/mmc$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p\bar{3}m1$	L72
					$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p\bar{6}m2$	L78
					$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$p3m1$	L69
$(01\bar{1}0)$	**c**	**a**	$\mathbf{a}+2\mathbf{b}$	$Amma$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$pmma$	L41
$(\bar{1}010)$	**c**	**b**	$-(2\mathbf{a}+\mathbf{b})$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$pmmn$ $(\mathbf{b}'/4)$	L46
$(1\bar{1}00)$	**c**	$-(\mathbf{a}+\mathbf{b})$	$(\mathbf{a}-\mathbf{b})$		$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$pmm2$ $(\mathbf{a}'/4)$	L23
$(\bar{1}2\bar{1}0)$	**c**	$2\mathbf{a}+\mathbf{b}$	**b**	$Amam$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$pmam$	L40
$(\bar{1}\bar{1}20)$	**c**	$(\mathbf{b}-\mathbf{a})$	$-(\mathbf{a}+\mathbf{b})$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$pmab$ $(\mathbf{b}'/4)$	L45
$(2\bar{1}\bar{1}0)$	**c**	$-(\mathbf{a}+2\mathbf{b})$	**a**		$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$pma2$	L24

Auxiliary tables for Laue class D_{6h} – $6/mmm$

Centring type *P*

Orientation orbit $(hkil)$	Conventional basis of the scanning group $\mathbf{a}'$	$\mathbf{b}'$	$\mathbf{d}$	Auxiliary basis of the scanning group $\widehat{\mathbf{a}}$	$\widehat{\mathbf{b}}$	$\widehat{\mathbf{c}}$
$(mn\overline{m+n}0)$	$\mathbf{c}$	$n\mathbf{a}-m\mathbf{b}$	$p\mathbf{a}+q\mathbf{b}$	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$
$(\overline{m+n}mn0)$	$\mathbf{c}$	$m\mathbf{a}+(m+n)\mathbf{b}$	$-q\mathbf{a}+(p-q)\mathbf{b}$	$\mathbf{b}$	$-(\mathbf{a}+\mathbf{b})$	$\mathbf{c}$
$(n\overline{m+n}m0)$	$\mathbf{c}$	$-(m+n)\mathbf{a}-n\mathbf{b}$	$(q-p)\mathbf{a}-p\mathbf{b}$	$-(\mathbf{a}+\mathbf{b})$	$\mathbf{a}$	$\mathbf{c}$
$(nm\overline{m+n}0)$	$-\mathbf{c}$	$m\mathbf{a}-n\mathbf{b}$	$-q\mathbf{a}-p\mathbf{b}$	$-\mathbf{b}$	$-\mathbf{a}$	$-\mathbf{c}$
$(\overline{m+n}nm0)$	$\mathbf{c}$	$n\mathbf{a}+(m+n)\mathbf{b}$	$p\mathbf{a}+(p-q)\mathbf{b}$	$\mathbf{a}+\mathbf{b}$	$-\mathbf{b}$	$-\mathbf{c}$
$(m\overline{m+n}n0)$	$-\mathbf{c}$	$-(m+n)\mathbf{a}-m\mathbf{b}$	$(q-p)\mathbf{a}+q\mathbf{b}$	$-\mathbf{a}$	$\mathbf{a}+\mathbf{b}$	$-\mathbf{c}$
$(0h\overline{h}l)$	$\mathbf{a}$	$n(\mathbf{a}+2\mathbf{b})-m\mathbf{c}$	$p(\mathbf{a}+2\mathbf{b})+q\mathbf{c}$	$\mathbf{a}+2\mathbf{b}$	$\mathbf{c}$	$\mathbf{a}$
$(0h\overline{h}\overline{l})$	$-\mathbf{a}$	$n(\mathbf{a}+2\mathbf{b})+m\mathbf{c}$	$p(\mathbf{a}+2\mathbf{b})-q\mathbf{c}$			
$(\overline{h}0hl)$	$\mathbf{b}$	$-n(2\mathbf{a}+\mathbf{b})-m\mathbf{c}$	$-p(2\mathbf{a}+\mathbf{b})+q\mathbf{c}$	$-(2\mathbf{a}+\mathbf{b})$	$\mathbf{c}$	$\mathbf{b}$
$(\overline{h}0h\overline{l})$	$-\mathbf{b}$	$-n(2\mathbf{a}+\mathbf{b})+m\mathbf{c}$	$-p(2\mathbf{a}+\mathbf{b})-q\mathbf{c}$			
$(h\overline{h}0l)$	$-(\mathbf{a}+\mathbf{b})$	$n(\mathbf{a}-\mathbf{b})-m\mathbf{c}$	$p(\mathbf{a}-\mathbf{b})+q\mathbf{c}$	$\mathbf{a}-\mathbf{b}$	$\mathbf{c}$	$-(\mathbf{a}+\mathbf{b})$
$(h\overline{h}0\overline{l})$	$(\mathbf{a}+\mathbf{b})$	$n(\mathbf{a}-\mathbf{b})+m\mathbf{c}$	$p(\mathbf{a}-\mathbf{b})-q\mathbf{c}$			
l odd $\Rightarrow n=l, m=2h$; l even $\Rightarrow n=l/2, m=h$						
$(\overline{h}2h\overline{h}l)$	$2\mathbf{a}+\mathbf{b}$	$n\mathbf{b}-m\mathbf{c}$	$p\mathbf{b}+q\mathbf{c}$	$\mathbf{b}$	$\mathbf{c}$	$2\mathbf{a}+\mathbf{b}$
$(\overline{h}2h\overline{h}\overline{l})$	$-(2\mathbf{a}+\mathbf{b})$	$n\mathbf{b}+m\mathbf{c}$	$p\mathbf{b}-q\mathbf{c}$			
$(\overline{hh}2hl)$	$\mathbf{b}-\mathbf{a}$	$-n(\mathbf{a}+\mathbf{b})-m\mathbf{c}$	$-p(\mathbf{a}+\mathbf{b})+q\mathbf{c}$	$-(\mathbf{a}+\mathbf{b})$	$\mathbf{c}$	$\mathbf{b}-\mathbf{a}$
$(\overline{hh}2h\overline{l})$	$\mathbf{a}-\mathbf{b}$	$-n(\mathbf{a}+\mathbf{b})+m\mathbf{c}$	$-p(\mathbf{a}+\mathbf{b})-q\mathbf{c}$			
$(2h\overline{hh}l)$	$-(\mathbf{a}+2\mathbf{b})$	$n\mathbf{a}-m\mathbf{c}$	$p\mathbf{a}+q\mathbf{c}$	$\mathbf{a}$	$\mathbf{c}$	$-\mathbf{a}+2\mathbf{b}$
$(2h\overline{hh}\overline{l})$	$\mathbf{a}+2\mathbf{b}$	$n\mathbf{a}+m\mathbf{c}$	$p\mathbf{a}-q\mathbf{c}$			
l odd $\Rightarrow n=l, m=2h$; l even $\Rightarrow n=l/2, m=h$						

Arithmetic class 622*P*

Serial No.	177	178	179	180	181	182
Group type	D_6^1	D_6^2	D_6^3	D_6^4	D_6^5	D_6^6
Group	$P622$	$P6_122$	$P6_522$	$P6_222$	$P6_422$	$P6_322$
$(mn\overline{m+n}0)$ $(\overline{m+n}mn0)$ $(n\overline{m+n}m0)$ $(nm\overline{m+n}0)$ $(\overline{m+n}nm0)$ $(m\overline{m+n}n0)$	$P112$	$P112_1$	$P112_1$	$P112$	$P112$	$P112_1$
	Reference group $B112$ with respect to origin at:					
$(0h\overline{h}l)$ $(0h\overline{h}\overline{l})$ $(\overline{h}0hl)$ $(\overline{h}0h\overline{l})$ $(h\overline{h}0l)$ $(h\overline{h}0\overline{l})$	P	P	P	P	P	P
		$P+\mathbf{c}/3$	$P+\mathbf{c}/6$	$P+\mathbf{c}/6$	$P+\mathbf{c}/3$	
		$P+\mathbf{c}/6$	$P+\mathbf{c}/3$	$P+\mathbf{c}/3$	$P+\mathbf{c}/6$	
$(\overline{h}2h\overline{h}l)$ $(\overline{h}2h\overline{h}\overline{l})$ $(\overline{hh}2hl)$ $(\overline{hh}2h\overline{l})$ $(2h\overline{hh}l)$ $(2h\overline{hh}\overline{l})$	P	$P+\mathbf{c}/12$	$P+5\mathbf{c}/12$	$P+\mathbf{c}/6$	$P+\mathbf{c}/3$	$P+\mathbf{c}/4$
		$P+5\mathbf{c}/12$	$P+\mathbf{c}/12$	$P+\mathbf{c}/3$	$P+\mathbf{c}/6$	
		$P+\mathbf{c}/4$	$P+\mathbf{c}/4$	P	P	

Arithmetic class $6/mmmP$

Serial No.	191	192	193	194
Group type	D^1_{6h}	D^2_{6h}	D^3_{6h}	D^4_{6h}
Group	$P6/mmm$	$P6/mcc$	$P6_3/mcm$	$P6_3/mmc$
$(mn\overline{m+n}0)$ $(\overline{m+n}mn0)$ $(n\overline{m+n}m0)$ $(nm\overline{m+n}0)$ $(\overline{m+n}nm0)$ $(m\overline{m+n}n0)$	$P112/m$	$P112/m$	$P112_1/m$	$P112_1/m$
$(0h\bar{h}l)$ $(0h\bar{h}\bar{l})$ $(\bar{h}0hl)$ $(\bar{h}0h\bar{l})$ $(h\bar{h}0l)$ $(h\bar{h}0\bar{l})$	$B112/m$	$B112/b$	$B112/b$	$B112/m$
$(\bar{h}2h\bar{h}l)$ $(\bar{h}2h\bar{h}\bar{l})$ $(\bar{h}\bar{h}2hl)$ $(\bar{h}\bar{h}2h\bar{l})$ $(2h\bar{h}\bar{h}l)$ $(2h\bar{h}\bar{h}\bar{l})$	$B112/m$	$B112/b$	$B112/m$	$B112/b$