Hexagonal   6. SCANNING TABLES   Laue class $D_{6h} - 6/mmm$

No. 186 $P6_3mc$ C_{6v}^4

$$\mathcal{G} = P6_3mc$$

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)	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$	$P6_3mc$	$[s\mathbf{d}, (s+\tfrac{1}{2})\mathbf{d}]$	$p3m1$	L69
$(01\bar{1}0)$	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{a}+2\mathbf{b}$	$A2_1ma$	$[0\mathbf{d}, \tfrac{1}{2}\mathbf{d}]$	$p2_1ma$	L28
$(\bar{1}010)$	$\mathbf{c}$	$\mathbf{b}$	$-(2\mathbf{a}+\mathbf{b})$		$[\tfrac{1}{4}\mathbf{d}, \tfrac{3}{4}\mathbf{d}]$	$p2_1mn$	L32
$(1\bar{1}00)$	$\mathbf{c}$	$-(\mathbf{a}+\mathbf{b})$	$(\mathbf{a}-\mathbf{b})$		$[\pm s\mathbf{d}, (\pm s+\tfrac{1}{2})\mathbf{d}]$	$p1m1$	L11
$(\bar{1}2\bar{1}0)$	$\mathbf{c}$	$2\mathbf{a}+\mathbf{b}$	$\mathbf{b}$	$A2_1am$	$[0\mathbf{d}, \tfrac{1}{2}\mathbf{d}]$	$p2_1am$	L29
$(\bar{1}\bar{1}20)$	$\mathbf{c}$	$(\mathbf{b}-\mathbf{a})$	$-(\mathbf{a}+\mathbf{b})$		$[\tfrac{1}{4}\mathbf{d}, \tfrac{3}{4}\mathbf{d}]$	$p2_1ab\ (\mathbf{b}'/4)$	L33
$(2\bar{1}\bar{1}0)$	$\mathbf{c}$	$-(\mathbf{a}+2\mathbf{b})$	$\mathbf{a}$		$[\pm s\mathbf{d}, (\pm s+\tfrac{1}{2})\mathbf{d}]$	$p1a1$	L12

Geometric class $D_{3h} - \bar{6}m2$ and $\bar{6}2m$

No. 187 $P\bar{6}m2$ D_{3h}^1

$$\mathcal{G} = P\bar{6}m2$$

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)	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$	$P\bar{6}m2$	$0\mathbf{d}, \tfrac{1}{2}\mathbf{d}$	$p\bar{6}m2$	L78
					$[s\mathbf{d}, -s\mathbf{d}]$	$p3m1$	L69
$(01\bar{1}0)$	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{a}+2\mathbf{b}$	$Amm2$	$[s\mathbf{d}, (s+\tfrac{1}{2})\mathbf{d}]$	$pmm2$	L23
$(\bar{1}010)$	$\mathbf{c}$	$\mathbf{b}$	$-(2\mathbf{a}+\mathbf{b})$				
$(1\bar{1}00)$	$\mathbf{c}$	$-(\mathbf{a}+\mathbf{b})$	$(\mathbf{a}-\mathbf{b})$				
$(\bar{1}2\bar{1}0)$	$\mathbf{c}$	$2\mathbf{a}+\mathbf{b}$	$\mathbf{b}$	$Am2m$	$[0\mathbf{d}, \tfrac{1}{2}\mathbf{d}]$	$pm2m$	L27
$(\bar{1}\bar{1}20)$	$\mathbf{c}$	$(\mathbf{b}-\mathbf{a})$	$-(\mathbf{a}+\mathbf{b})$		$[\tfrac{1}{4}\mathbf{d}, \tfrac{3}{4}\mathbf{d}]$	$pm2_1b$	L28
$(2\bar{1}\bar{1}0)$	$\mathbf{c}$	$-(\mathbf{a}+2\mathbf{b})$	$\mathbf{a}$		$[\pm s\mathbf{d}, (\pm s+\tfrac{1}{2})\mathbf{d}]$	$pm11$	L11

No. 188 $P\bar{6}c2$ D_{3h}^2

$$\mathcal{G} = P\bar{6}c2$$

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)	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$	$P\bar{6}c2$	$[0\mathbf{d}, \tfrac{1}{2}\mathbf{d}]$	$p312$	L67
					$[\tfrac{1}{4}\mathbf{d}, \tfrac{3}{4}\mathbf{d}]$	$p\bar{6}$	L74
					$[\pm s\mathbf{d}, (\pm s+\tfrac{1}{2})\mathbf{d}]$	$p3$	L65
$(01\bar{1}0)$	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{a}+2\mathbf{b}$	$Ama2$	$[s\mathbf{d}, (s+\tfrac{1}{2})\mathbf{d}]$	$pma2$	L24
$(\bar{1}010)$	$\mathbf{c}$	$\mathbf{b}$	$-(2\mathbf{a}+\mathbf{b})$				
$(1\bar{1}00)$	$\mathbf{c}$	$-(\mathbf{a}+\mathbf{b})$	$(\mathbf{a}-\mathbf{b})$				
$(\bar{1}2\bar{1}0)$	$\mathbf{c}$	$2\mathbf{a}+\mathbf{b}$	$\mathbf{b}$	$Am2a$	$[0\mathbf{d}, \tfrac{1}{2}\mathbf{d}]$	$pm2a$	L31
$(\bar{1}\bar{1}20)$	$\mathbf{c}$	$(\mathbf{b}-\mathbf{a})$	$-(\mathbf{a}+\mathbf{b})$		$[\tfrac{1}{4}\mathbf{d}, \tfrac{3}{4}\mathbf{d}]$	$pm2_1n\ (\mathbf{a}'/4)$	L32
$(2\bar{1}\bar{1}0)$	$\mathbf{c}$	$-(\mathbf{a}+2\mathbf{b})$	$\mathbf{a}$		$[\pm s\mathbf{d}, (\pm s+\tfrac{1}{2})\mathbf{d}]$	$pm11\ (\mathbf{a}'/4)$	L11

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 $\Rightarrow n=l/2,\ m=h$						
$(\overline{h}2h\overline{h}l)$	$2\mathbf{a}+\mathbf{b}$	$n\mathbf{b}-m\mathbf{c}$	$p\mathbf{b}+q\mathbf{c}$	$\mathbf{b}$	$\mathbf{c}$	$2\mathbf{a}+\mathbf{b}$
$(\overline{h}2h\overline{h}\overline{l})$	$-(2\mathbf{a}+\mathbf{b})$	$n\mathbf{b}+m\mathbf{c}$	$p\mathbf{b}-q\mathbf{c}$			
$(\overline{h}h2hl)$	$\mathbf{b}-\mathbf{a}$	$-n(\mathbf{a}+\mathbf{b})-m\mathbf{c}$	$-p(\mathbf{a}+\mathbf{b})+q\mathbf{c}$	$-(\mathbf{a}+\mathbf{b})$	$\mathbf{c}$	$\mathbf{b}-\mathbf{a}$
$(\overline{h}h2h\overline{l})$	$\mathbf{a}-\mathbf{b}$	$-n(\mathbf{a}+\mathbf{b})+m\mathbf{c}$	$-p(\mathbf{a}+\mathbf{b})-q\mathbf{c}$			
$(2h\overline{h}\overline{h}l)$	$-(\mathbf{a}+2\mathbf{b})$	$n\mathbf{a}-m\mathbf{c}$	$p\mathbf{a}+q\mathbf{c}$	$\mathbf{a}$	$\mathbf{c}$	$-\mathbf{a}+2\mathbf{b}$
$(2h\overline{h}\overline{h}\overline{l})$	$\mathbf{a}+2\mathbf{b}$	$n\mathbf{a}+m\mathbf{c}$	$p\mathbf{a}-q\mathbf{c}$			
l odd $\Rightarrow n=l,\ m=2h;\ l$ even $\Rightarrow n=l/2,\ m=h$						

Arithmetic class $622P$

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	$P622$	$P6_122$	$P6_522$	$P6_222$	$P6_422$	$P6_322$
$(mnm+n0)$	$P112$	$P112_1$	$P112_1$	$P112$	$P112$	$P112_1$
$(\overline{m+n}mn0)$						
$(n\overline{m+n}m0)$						
$(nm\overline{m+n}0)$						
$(\overline{m+n}nm0)$						
$(m\overline{m+n}n0)$						
	Reference group $B112$ with respect to origin at:					
$(0h\overline{h}l)$	P	P	P	P	P	P
$(0h\overline{h}\overline{l})$						
$(\overline{h}0hl)$		$P+\mathbf{c}/3$	$P+\mathbf{c}/6$	$P+\mathbf{c}/6$	$P+\mathbf{c}/3$	
$(\overline{h}0h\overline{l})$						
$(h\overline{h}0l)$		$P+\mathbf{c}/6$	$P+\mathbf{c}/3$	$P+\mathbf{c}/3$	$P+\mathbf{c}/6$	
$(h\overline{h}0\overline{l})$						
$(\overline{h}2h\overline{h}l)$	P	$P+\mathbf{c}/12$	$P+5\mathbf{c}/12$	$P+\mathbf{c}/6$	$P+\mathbf{c}/3$	$P+\mathbf{c}/4$
$(\overline{h}2h\overline{h}\overline{l})$						
$(\overline{h}h2hl)$		$P+5\mathbf{c}/12$	$P+\mathbf{c}/12$	$P+\mathbf{c}/3$	$P+\mathbf{c}/6$	
$(\overline{h}h2h\overline{l})$						
$(2h\overline{h}\overline{h}l)$		$P+\mathbf{c}/4$	$P+\mathbf{c}/4$	P	P	
$(2h\overline{h}\overline{h}\overline{l})$						

Arithmetic class 6mmP

Serial No.	183	184	185	186
Group type	C_{6v}^1	C_{6v}^2	C_{6v}^3	C_{6v}^4
Group	$P6mm$	$P6cc$	$P6_3cm$	$P6_3mc$
$(mn\overline{m+n}0)$	$P112$	$P112$	$P112_1$	$P112_1$
$(\overline{m+n}mn0)$				
$(n\overline{m+n}m0)$				
$(nm\overline{m+n}0)$				
$(\overline{m+n}nm0)$				
$(m\overline{m+n}n0)$				
$(0h\overline{h}l)$	$B11m$	$B11b$	$B11b$	$B11m$
$(0h\overline{h}\overline{l})$				
$(\overline{h}0hl)$				
$(\overline{h}0h\overline{l})$				
$(h\overline{h}0l)$				
$(h\overline{h}0\overline{l})$				
$(\overline{h}2h\overline{h}l)$	$B11m$	$B11b$	$B11m$	$B11b$
$(\overline{h}2h\overline{h}\overline{l})$				
$(\overline{hh}2hl)$				
$(\overline{hh}2h\overline{l})$				
$(2h\overline{h}\overline{h}l)$				
$(2h\overline{hh}\overline{l})$				

Arithmetic classes $\overline{6}m2P$ and $\overline{6}2mP$

Serial No.	187	188	189	190
Group type	D_{3h}^1	D_{3h}^2	D_{3h}^3	D_{3h}^4
Group	$P\overline{6}m2$	$P\overline{6}c2$	$P\overline{6}2m$	$P\overline{6}2c$
$(mn\overline{m+n}0)$	$P11m$	$P11m$	$P11m$	$P11m$
$(\overline{m+n}mn0)$		$(\mathbf{c}/4)$		$(\mathbf{c}/4)$
$(n\overline{m+n}m0)$				
$(nm\overline{m+n}0)$				
$(\overline{m+n}nm0)$				
$(m\overline{m+n}n0)$				
$(0h\overline{h}l)$	$B11m$	$B11b$	$B112$	$B112$
$(0h\overline{h}\overline{l})$				
$(\overline{h}0hl)$				
$(\overline{h}0h\overline{l})$				
$(h\overline{h}0l)$				
$(h\overline{h}0\overline{l})$				
$(\overline{h}2h\overline{h}l)$	$B112$	$B112$	$B11m$	$B11b$
$(\overline{h}2h\overline{h}\overline{l})$				
$(\overline{hh}2hl)$				
$(\overline{hh}2h\overline{l})$				
$(2h\overline{h}\overline{h}l)$				
$(2h\overline{hh}\overline{l})$				