

Hexagonal

6. SCANNING TABLES

 Laue class $D_{6h} - 6/mmm$

 No. 176 $P6_3/m$
 $\mathcal{G} = P6_3/m$
 C_{6h}^2

Orientation orbit (<i>hkil</i>)	Conventional basis of the scanning group a' b' d			Scanning group \mathcal{H}	Linear orbit sd	Sectional layer group $\mathcal{L}(\mathbf{sd})$	
(0001)	a	b	c	$P6_3/m$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$ $[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$ $[\pm\mathbf{sd}, (\pm s + \frac{1}{2})\mathbf{d}]$	$p\bar{3}$	L66
						$p\bar{6}$	L74
						$p3$	L65

Auxiliary tables for Laue class $C_{6h} - 6/m$

Centring type P

Orientation orbit (<i>hkil</i>)	Conventional basis of the scanning group a' b' d			Auxiliary basis of the scanning group $\hat{\mathbf{a}}$ $\hat{\mathbf{b}}$ $\hat{\mathbf{c}}$		
$(\overline{mnm} + \bar{n}0)$	c	$na - mb$	$pa + qb$	a	b	c
$(\overline{m} + nmn0)$	c	$ma + (m+n)\mathbf{b}$	$-qa + (p-q)\mathbf{b}$	b	$-(\mathbf{a} + \mathbf{b})$	c
$(\overline{nm} + \bar{nm}0)$	c	$-(m+n)\mathbf{a} - n\mathbf{b}$	$(q-p)\mathbf{a} - p\mathbf{b}$	$-(\mathbf{a} + \mathbf{b})$	a	c

Arithmetic classes $6P, \bar{6}P$ and $6/mP$

Serial No.	168	169	170	171	172	173	174	175	176
Group type	C_6^1	C_6^2	C_6^3	C_6^4	C_6^5	C_6^6	C_{3h}^1	C_{6h}^1	C_{6h}^2
Group	$P6$	$P6_1$	$P6_5$	$P6_2$	$P6_4$	$P6_3$	$\bar{P}6$	$P6/m$	$P6_3/m$
$(\overline{mnm} + \bar{n}0)$	$P112$	$P112_1$	$P112_1$	$P112$	$P112$	$P112_1$	$P11m$	$P112/m$	$P112_1/m$
$(\overline{m} + nmn0)$									
$(\overline{nm} + \bar{nm}0)$									

Laue class $D_{6h} - 6/mmm$

Geometric class $D_6 - 622$

 No. 177 $P622$
 $\mathcal{G} = P622$
 D_6^1

Orientation orbit (<i>hkil</i>)	Conventional basis of the scanning group a' b' d			Scanning group \mathcal{H}	Linear orbit sd	Sectional layer group $\mathcal{L}(\mathbf{sd})$	
(0001)	a	b	c	$P622$	$0\mathbf{d}, \frac{1}{2}\mathbf{d}$ $[\mathbf{sd}, -\mathbf{sd}]$	$p622$	L76
						$p6$	L73
$(01\bar{1}0)$	c	a	$\mathbf{a} + 2\mathbf{b}$	$A222$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p222$	L19
$(\bar{1}010)$	c	b	$-(2\mathbf{a} + \mathbf{b})$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p22_12$	L20
$(1\bar{1}00)$	c	$-(\mathbf{a} + \mathbf{b})$	$(\mathbf{a} - \mathbf{b})$		$[\pm\mathbf{sd}, (\pm s + \frac{1}{2})\mathbf{d}]$	$p112$	L03
$(\bar{1}2\bar{1}0)$	c	$2\mathbf{a} + \mathbf{b}$	b	$A222$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p222$	L19
$(\bar{1}120)$	c	$(\mathbf{b} - \mathbf{a})$	$-(\mathbf{a} + \mathbf{b})$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p22_12$	L20
$(2\bar{1}10)$	c	$-(\mathbf{a} + 2\mathbf{b})$	a		$[\pm\mathbf{sd}, (\pm s + \frac{1}{2})\mathbf{d}]$	$p112$	L03

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

Centring type P

Orientation orbit ($hkil$)	Conventional basis of the scanning group			Auxiliary basis of the scanning group		
	\mathbf{a}'	\mathbf{b}'	\mathbf{d}	$\hat{\mathbf{a}}$	$\hat{\mathbf{b}}$	$\hat{\mathbf{c}}$
$(\overline{mnm} + n0)$	\mathbf{c}	$n\mathbf{a} - m\mathbf{b}$	$p\mathbf{a} + q\mathbf{b}$	\mathbf{a}	\mathbf{b}	\mathbf{c}
$(\overline{m} + \overline{nmn}0)$	\mathbf{c}	$m\mathbf{a} + (m+n)\mathbf{b}$	$-q\mathbf{a} + (p-q)\mathbf{b}$	\mathbf{b}	$-(\mathbf{a} + \mathbf{b})$	\mathbf{c}
$(\overline{nm} + \overline{nm}0)$	\mathbf{c}	$-(m+n)\mathbf{a} - n\mathbf{b}$	$(q-p)\mathbf{a} - p\mathbf{b}$	$-(\mathbf{a} + \mathbf{b})$	\mathbf{a}	\mathbf{c}
$(\overline{nmn} + n0)$	$-\mathbf{c}$	$m\mathbf{a} - n\mathbf{b}$	$-q\mathbf{a} - p\mathbf{b}$	$-\mathbf{b}$	$-\mathbf{a}$	$-\mathbf{c}$
$(\overline{m} + \overline{nm}0)$	\mathbf{c}	$n\mathbf{a} + (m+n)\mathbf{b}$	$p\mathbf{a} + (p-q)\mathbf{b}$	$\mathbf{a} + \mathbf{b}$	$-\mathbf{b}$	$-\mathbf{c}$
$(\overline{mm} + \overline{nn}0)$	$-\mathbf{c}$	$-(m+n)\mathbf{a} - m\mathbf{b}$	$(q-p)\mathbf{a} + q\mathbf{b}$	$-\mathbf{a}$	$\mathbf{a} + \mathbf{b}$	$-\mathbf{c}$
$(0h\overline{hl})$	\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}	$-(\mathbf{a} + \mathbf{b})$
$(h\overline{h}0\overline{l})$	$(\mathbf{a} + \mathbf{b})$	$n(\mathbf{a} - \mathbf{b}) + m\mathbf{c}$	$p(\mathbf{a} - \mathbf{b}) - q\mathbf{c}$			
$l \text{ odd} \Rightarrow n = l, m = 2h; l \text{ even} \Rightarrow n = l/2, m = h$						
$(\overline{h}2h\overline{hl})$	$2\mathbf{a} + \mathbf{b}$	$n\mathbf{b} - m\mathbf{c}$	$p\mathbf{b} + q\mathbf{c}$	\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}	$\mathbf{b} - \mathbf{a}$
$(\overline{hh}2h\overline{l})$	$\mathbf{a} - \mathbf{b}$	$-n(\mathbf{a} + \mathbf{b}) + m\mathbf{c}$	$-p(\mathbf{a} + \mathbf{b}) - q\mathbf{c}$			
$(2h\overline{hhl})$	$-(\mathbf{a} + 2\mathbf{b})$	$n\mathbf{a} - m\mathbf{c}$	$p\mathbf{a} + q\mathbf{c}$	\mathbf{a}	\mathbf{c}	$-\mathbf{a} + 2\mathbf{b}$
$(2h\overline{h}\overline{hl})$	$\mathbf{a} + 2\mathbf{b}$	$n\mathbf{a} + m\mathbf{c}$	$p\mathbf{a} - q\mathbf{c}$			
$l \text{ odd} \Rightarrow n = l, m = 2h; l \text{ even} \Rightarrow n = l/2, m = h$						

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	$P6_{22}$	$P6_{122}$	$P6_{522}$	$P6_{22}$	$P6_{422}$	$P6_{322}$
$(\overline{mnm} + n0)$	$P112$	$P112_1$	$P112_1$	$P112$	$P112$	$P112_1$
$(\overline{m} + \overline{nmn}0)$						
$(\overline{nm} + \overline{nm}0)$						
$(\overline{nmn} + n0)$						
$(\overline{m} + \overline{nm}0)$						
$(\overline{mm} + \overline{nn}0)$						
Reference group $B112$ with respect to origin at:						
$(0h\overline{hl})$	P	P	P	P	P	P
$(0h\overline{h}\overline{l})$						
$(\overline{h}0hl)$		$P + \mathbf{c}/3$	$P + \mathbf{c}/6$	$P + \mathbf{c}/6$	$P + \mathbf{c}/3$	
$(\overline{h}0h\overline{l})$						
$(h\overline{h}0l)$		$P + \mathbf{c}/6$	$P + \mathbf{c}/3$	$P + \mathbf{c}/3$	$P + \mathbf{c}/6$	
$(h\overline{h}0\overline{l})$						
$(\overline{h}2h\overline{hl})$	P	$P + \mathbf{c}/12$	$P + 5\mathbf{c}/12$	$P + \mathbf{c}/6$	$P + \mathbf{c}/3$	$P + \mathbf{c}/4$
$(\overline{h}2h\overline{h}\overline{l})$						
$(\overline{hh}2hl)$		$P + 5\mathbf{c}/12$	$P + \mathbf{c}/12$	$P + \mathbf{c}/3$	$P + \mathbf{c}/6$	
$(\overline{hh}2h\overline{l})$						
$(2h\overline{hhl})$		$P + \mathbf{c}/4$	$P + \mathbf{c}/4$	P	P	
$(2h\overline{h}\overline{hl})$						