

Orthorhombic

6. SCANNING TABLES

 Laue class $D_{2h} - mmm$

 No. 70 $Fddd$

$$\mathcal{G} = F \frac{2}{d} \frac{2}{d} \frac{2}{d} \quad \text{origin 1}$$

 D_{2h}^{24}

Orientation orbit (<i>hkl</i>)	Conventional basis of the scanning group a' b' d	Scanning group \mathcal{H}	Linear orbit sd	Sectional layer group $\mathcal{L}(\mathbf{sd})$	
(001)	a b c	$Fddd$ ($\tau/8$)	$[0\mathbf{d}, \frac{1}{2}\mathbf{d};$ $\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$c222$	L22
(100)	b c a		$[\frac{1}{8}\mathbf{d}, \frac{5}{8}\mathbf{d};$ $\frac{3}{8}\mathbf{d}, \frac{7}{8}\mathbf{d}]$	$c222$ [[$\mathbf{a}' + \mathbf{b}'$]/4] $\widehat{p}112/b$ [[$\mathbf{a}' + \mathbf{b}'$]/8] $\widehat{p}112/a$ [[$3\mathbf{a}' + \mathbf{b}'$]/8 or ($\mathbf{a}' + 3\mathbf{b}'$)/8]	L22 L07 L07
(010)	c a b		$[\pm\mathbf{sd}, (\pm s + \frac{1}{4})\mathbf{d};$ $(\pm s + \frac{1}{2})\mathbf{d}, (\pm s + \frac{3}{4})\mathbf{d}]$	$\widehat{p}112$	L03

$$\tau = \mathbf{a}' + \mathbf{b}' + \mathbf{d}.$$

 No. 70 $Fddd$

$$\mathcal{G} = F \frac{2}{d} \frac{2}{d} \frac{2}{d} \quad \text{origin 2}$$

 D_{2h}^{24}

Orientation orbit (<i>hkl</i>)	Conventional basis of the scanning group a' b' d	Scanning group \mathcal{H}	Linear orbit sd	Sectional layer group $\mathcal{L}(\mathbf{sd})$	
(001)	a b c	$Fddd$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d};$ $\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$\widehat{p}112/b$	L07
(100)	b c a		$[\frac{1}{8}\mathbf{d}, \frac{5}{8}\mathbf{d};$ $\frac{3}{8}\mathbf{d}, \frac{7}{8}\mathbf{d}]$	$\widehat{p}112/a$ ($\mathbf{a}'/4$ or $\mathbf{b}'/4$) $c222$ [[$\mathbf{a}' + \mathbf{b}'$]/8] $c222$ [$3(\mathbf{a}' + \mathbf{b}')/8$]	L07 L22 L22
(010)	c a b		$[\pm\mathbf{sd}, (\pm s + \frac{1}{4})\mathbf{d};$ $(\pm s + \frac{1}{2})\mathbf{d}, (\pm s + \frac{3}{4})\mathbf{d}]$	$\widehat{p}112$ [[$\mathbf{a}' + \mathbf{b}'$]/8]	L03

 No. 71 $Immm$

$$\mathcal{G} = I \frac{2}{m} \frac{2}{m} \frac{2}{m}$$

 D_{2h}^{25}

Orientation orbit (<i>hkl</i>)	Conventional basis of the scanning group a' b' d	Scanning group \mathcal{H}	Linear orbit sd	Sectional layer group $\mathcal{L}(\mathbf{sd})$	
(001)	a b c	$Immm$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$pmmm$	L37
(100)	b c a		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$pmmn$ [($\mathbf{a}' + \mathbf{b}'$)/4]	L46
(010)	c a b		$[\pm\mathbf{sd}, (\pm s + \frac{1}{2})\mathbf{d}]$	$pmm2$	L23

Centring type F

Orientation orbit (hkl)	Conventional basis of the scanning group			Auxiliary basis of the scanning group		
	\mathbf{a}'	\mathbf{b}'	\mathbf{d}	$\hat{\mathbf{a}}$	$\hat{\mathbf{b}}$	$\hat{\mathbf{c}}$
($hk0$)	\mathbf{c}	$n\hat{\mathbf{a}} - m\hat{\mathbf{b}}$	$p\hat{\mathbf{a}} + q\hat{\mathbf{b}}$	$(\mathbf{a} - \mathbf{b})/2$	$(\mathbf{a} + \mathbf{b})/2$	\mathbf{c}
($\bar{h}k0$)	\mathbf{c}	$n\hat{\mathbf{a}} + m\hat{\mathbf{b}}$	$-p\hat{\mathbf{a}} + q\hat{\mathbf{b}}$			
($0hk$)	\mathbf{a}	$n\hat{\mathbf{a}} - m\hat{\mathbf{b}}$	$p\hat{\mathbf{a}} + q\hat{\mathbf{b}}$	$(\mathbf{b} - \mathbf{c})/2$	$(\mathbf{b} + \mathbf{c})/2$	\mathbf{a}
($0\bar{h}k$)	\mathbf{a}	$n\hat{\mathbf{a}} + m\hat{\mathbf{b}}$	$-p\hat{\mathbf{a}} + q\hat{\mathbf{b}}$			
($k0h$)	\mathbf{b}	$n\hat{\mathbf{a}} - m\hat{\mathbf{b}}$	$p\hat{\mathbf{a}} + q\hat{\mathbf{b}}$	$(\mathbf{c} - \mathbf{a})/2$	$(\mathbf{c} + \mathbf{a})/2$	\mathbf{b}
($k0\bar{h}$)	\mathbf{b}	$n\hat{\mathbf{a}} + m\hat{\mathbf{b}}$	$-p\hat{\mathbf{a}} + q\hat{\mathbf{b}}$			

h even, k odd or h odd, k even $\Rightarrow n = h + k, m = h - k$
 h, k odd $\Rightarrow n = (h + k)/2, m = (h - k)/2$

Arithmetic classes $222F, mm2F$ and $mmmF$

Serial No. Group type Group	22	42	43	69	70	
	D_2^7 $F222$	C_{2v}^{18} $Fmm2$	C_{2v}^{19} $Fdd2$	D_{2h}^{23} $Fmmm$	D_{2h}^{24} $Fddd$	
					Origin 1	Origin 2
($hk0$)	$I112$	$I112$	$I112$	$I112/m$	$I112/b$	$I112/b$
($\bar{h}k0$)					$[(\mathbf{a} + \mathbf{b} + \mathbf{c})/8]$	
($0hk$)		$I11m$	$I11b$			
($0\bar{h}k$)					$(\mathbf{a}/8)$	
($k0h$)						
($k0\bar{h}$)						