

Laue class $D_{2h} - mmm$

6. SCANNING TABLES

Orthorhombic

 No. 68* $Ccca$

$$\mathcal{G} = C_{c c a}^{2 2 2} \text{ origin 1}$$

 D_{2h}^{22}

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	<i>Ccca</i> [(b + d)/4]	[0d , $\frac{1}{2}\mathbf{d}$] [$\frac{1}{4}\mathbf{d}$, $\frac{3}{4}\mathbf{d}$] [$\pm s\mathbf{d}$, ($\pm s + \frac{1}{2}$) d]	<i>c222</i> L22 $\widehat{p}112/n$ (a /4 or b /4) L07 $\widehat{p}112$ L03
(100)	b c a	<i>Bbcb</i> [(a' + b')/4]	[0d , $\frac{1}{2}\mathbf{d}$] [$\frac{1}{4}\mathbf{d}$, $\frac{3}{4}\mathbf{d}$] [$\pm s\mathbf{d}$, ($\pm s + \frac{1}{2}$) d]	<i>pban</i> [(a' + b')/4] L39 <i>pbab</i> (b' /4) L43 <i>pba2</i> L25
(010)	c a b	<i>Abaa</i> [(a' + d)/4]	[0d , $\frac{1}{2}\mathbf{d}$] [$\frac{1}{4}\mathbf{d}$, $\frac{3}{4}\mathbf{d}$] [$\pm s\mathbf{d}$, ($\pm s + \frac{1}{2}$) d]	<i>pban</i> [(a' + b')/4] L39 <i>pbaa</i> (a' /4) L43 <i>pba2</i> L25

 *New symbol. Old symbol: *Ccca*.

 No. 68* $Ccca$

$$\mathcal{G} = C_{c c a}^{2 2 2} \text{ origin 2}$$

 D_{2h}^{22}

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	<i>Ccca</i>	[0d , $\frac{1}{2}\mathbf{d}$] [$\frac{1}{4}\mathbf{d}$, $\frac{3}{4}\mathbf{d}$] [$\pm s\mathbf{d}$, ($\pm s + \frac{1}{2}$) d]	$\widehat{p}112/n$ L07 <i>c222</i> (b /4) L22 $\widehat{p}112$ (a /4 or b /4) L03
(100)	b c a	<i>Bbcb</i>	[0d , $\frac{1}{2}\mathbf{d}$] [$\frac{1}{4}\mathbf{d}$, $\frac{3}{4}\mathbf{d}$] [$\pm s\mathbf{d}$, ($\pm s + \frac{1}{2}$) d]	<i>pban</i> L39 <i>pbab</i> (a' /4) L43 <i>pba2</i> [(a' + b')/4] L25
(010)	c a b	<i>Abaa</i>	[0d , $\frac{1}{2}\mathbf{d}$] [$\frac{1}{4}\mathbf{d}$, $\frac{3}{4}\mathbf{d}$] [$\pm s\mathbf{d}$, ($\pm s + \frac{1}{2}$) d]	<i>pbaa</i> L43 <i>pbab</i> (b' /4) L39 <i>pba2</i> (a' /4) L25

 *New symbol. Old symbol: *Ccca*.

 No. 69 $Fmmm$

$$\mathcal{G} = F_{m m m}^{2 2 2}$$

 D_{2h}^{23}

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	<i>Fmmm</i>	[0d , $\frac{1}{2}\mathbf{d}$]	<i>cmmm</i> L47
(100)	b c a		[$\frac{1}{4}\mathbf{d}$, $\frac{3}{4}\mathbf{d}$]	<i>cmme</i> (b' /4) L48
(010)	c a b		[$\pm s\mathbf{d}$, ($\pm s + \frac{1}{2}$) d]	<i>cmm2</i> L26

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
$(hk0)$	$I112$	$I112$	$I112$	$I112/m$	$I112/b$	$I112/b$
$(\bar{h}k0)$					$[(\mathbf{a} + \mathbf{b} + \mathbf{c})/8]$	
$(0hk)$		$I11m$	$I11b$			
$(0\bar{h}k)$					$(\mathbf{a}/8)$	
$(k0h)$						
$(k0\bar{h})$						