

Laue class $O_h - m\bar{3}m$

6. SCANNING TABLES

Cubic

 No. 223 $Pm\bar{3}n$

$$\mathcal{G} = P_m^4 \bar{3}_n^2$$

 O_h^3

Orientation orbit (<i>hkl</i>)	Conventional basis of the scanning group			Scanning group \mathcal{H}	Linear orbit <i>sd</i>	Sectional layer group $\mathcal{L}(sd)$
	<i>a'</i>	<i>b'</i>	<i>d</i>			
(001)	a	b	c	$P4_2/mmc$ (<i>a'</i> /2 or <i>b'</i> /2)	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	<i>pmmm</i> L37
(100)	b	c	a		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p\bar{4}m2$ (<i>a'</i> /2 or <i>b'</i> /2) L59
(010)	c	a	b		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	<i>pmm2</i> L23
(110)	c	a - b	a + b	$Amaa$ [(<i>b'</i> + <i>d</i>)/4]	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	<i>pman</i> L42
(110)	c	a + b	b - a		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	<i>pmaa</i> (<i>b'</i> /4) L38
(011)	a	b - c	b + c		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	<i>pma2</i> [(<i>a'</i> + <i>b'</i>)/4] L24
(011)	a	b + c	c - b			
(101)	b	c - a	c + a			
(101)	b	c + a	a - c			
(111)	a - b	b - c	τ	$R\bar{3}c$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d};$	$p\bar{3}$ L66
(111)	b - a	-b - c	τ_3		$\frac{1}{3}\mathbf{d}, \frac{2}{6}\mathbf{d};$	$p\bar{3} [(2\mathbf{a}' + \mathbf{b}')/3]$ L66
(111)	a + b	c - b	τ_1		$\frac{2}{3}\mathbf{d}, \frac{1}{6}\mathbf{d}]$	$p\bar{3} [(\mathbf{a}' + 2\mathbf{b}')/3]$ L66
(111)	-a - b	b + c	τ_2		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d};$	<i>p321</i> L68
					$\frac{1}{12}\mathbf{d}, \frac{7}{12}\mathbf{d};$	<i>p321</i> [(2 <i>a'</i> + <i>b'</i>)/3] L68
				$\frac{5}{12}\mathbf{d}, \frac{11}{12}\mathbf{d}]$	<i>p321</i> [(<i>a'</i> + 2 <i>b'</i>)/3] L68	
				$[\pm s\mathbf{d}, (\pm s + \frac{1}{6})\mathbf{d},$		
				$(\pm s + \frac{1}{3})\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d},$		
				$(\pm s + \frac{2}{3})\mathbf{d}, (\pm s + \frac{5}{6})\mathbf{d}]$	<i>p3</i> L65	

 No. 224 $Pn\bar{3}m$

$$\mathcal{G} = P_n^4 \bar{3}_m^2 \text{ origin } 1$$

 O_h^4

Orientation orbit (<i>hkl</i>)	Conventional basis of the scanning group			Scanning group \mathcal{H}	Linear orbit <i>sd</i>	Sectional layer group $\mathcal{L}(sd)$
	<i>a'</i>	<i>b'</i>	<i>d</i>			
(001)	a	b	c	$P4_2/nm$ (origin 1)	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p\bar{4}2m$ L57
(100)	b	c	a		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$\widehat{c}mme$ [(<i>a'</i> + <i>b'</i>)/4] L48
(010)	c	a	b		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	$\widehat{c}mm2$ L26
(110)	c	a - b	a + b	$Abmm$ [(<i>a'</i> + <i>d</i>)/4]	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$pbmm$ [(<i>a'</i> + <i>b'</i>)/4] L40
(110)	c	a + b	b - a		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$pbmb$ (<i>a'</i> /4) L38
(011)	a	b - c	b + c		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	$pbm2$ [(<i>a'</i> + <i>b'</i>)/4] L24
(011)	a	b + c	c - b			
(101)	b	c - a	c + a			
(101)	b	c + a	a - c			
(111)	a - b	b - c	τ	$R\bar{3}m$ (<i>d</i> /4)	$[\frac{1}{4}\mathbf{d}, [\frac{3}{4}\mathbf{d},$	$p\bar{3}m1$ L72
(111)	b - a	-b - c	τ_3		$\frac{7}{12}\mathbf{d}, \parallel \frac{1}{12}\mathbf{d},$	$p\bar{3}m1 [(2\mathbf{a}' + \mathbf{b}')/3]$ L72
(111)	a + b	c - b	τ_1		$\frac{11}{12}\mathbf{d}] \quad \frac{5}{12}\mathbf{d}]$	$p\bar{3}m1 [(\mathbf{a}' + 2\mathbf{b}')/3]$ L72
(111)	-a - b	b + c	τ_2		$[(\pm s + \frac{1}{4})\mathbf{d}, (\pm s + \frac{7}{12})\mathbf{d}, (\pm s + \frac{11}{12})\mathbf{d}]$	<i>p3m1</i> L69

Auxiliary tables for Laue class $O_h - m\bar{3}m$

Centring type P

Orientation orbit (hkl)	Conventional basis of the scanning group			Auxiliary basis of the scanning group		
	a'	b'	d	\hat{a}	\hat{b}	\hat{c}
$(mn0)$	c	$na - mb$	$pa + qb$	a	b	c
$(\bar{m}n0)$	c	$na + mb$	$-pa + qb$			
$(nm0)$	c	$ma - nb$	$qa + pb$			
$(\bar{n}m0)$	c	$ma + nb$	$-qa + pb$			
$(0mn)$	a	$nb - mc$	$pb + qc$	b	c	a
$(0\bar{m}n)$	a	$nb + mc$	$-pb + qc$			
$(0nm)$	a	$mb - nc$	$qb + pc$			
$(0\bar{n}m)$	a	$mb + nc$	$-qb + pc$			
$(n0m)$	b	$nc - ma$	$pc + qa$	c	a	b
$(n0\bar{m})$	b	$nc + ma$	$-pc + qa$			
$(m0n)$	b	$mc - na$	$qc + pa$			
$(m0\bar{n})$	b	$mc + na$	$-qc + pa$			
(hhl)	$a - b$	$n(a + b) - mc$	$p(a + b) + qc$	$a + b$	c	$a - b$
$(\bar{h}hl)$	$a - b$	$n(a + b) + mc$	$-p(a + b) + qc$			
$(h\bar{h}l)$	$a + b$	$n(b - a) - mc$	$p(b - a) + qc$	$b - a$	c	$a + b$
$(\bar{h}\bar{h}l)$	$a + b$	$n(b - a) + mc$	$-p(b - a) + qc$			
(lhh)	$b - c$	$n(b + c) - ma$	$p(b + c) + qa$	$b + c$	a	$b - c$
$(l\bar{h}h)$	$b - c$	$n(b + c) + ma$	$-p(b + c) + qa$			
$(lhh\bar{h})$	$b + c$	$n(c - b) - ma$	$p(c - b) + qa$	$c - b$	a	$b + c$
$(l\bar{h}h\bar{h})$	$b + c$	$n(c - b) + ma$	$-p(c - b) + qa$			
$(hllh)$	$c - a$	$n(c + a) - mb$	$p(c + a) + qb$	$c + a$	b	$c - a$
$(\bar{h}llh)$	$c - a$	$n(c + a) + mb$	$-p(c + a) + qb$			
$(h\bar{l}lh)$	$c + a$	$n(a - c) - mb$	$p(a - c) + qb$	$a - c$	b	$c + a$
$(hl\bar{l}h)$	$c + a$	$n(a - c) + mb$	$-p(a - c) + qb$			

l odd $\Rightarrow n = l, m = 2h; l$ even $\Rightarrow n = l/2, m = h$

Arithmetic class $m\bar{3}mP$

Serial No. Group type Group	221 O_h^1 $Pm\bar{3}m$	222 O_h^2 $Pn\bar{3}m$		223 O_h^3 $Pm\bar{3}n$	224 O_h^4 $Pn\bar{3}n$	
		Origin 1	Origin 2		Origin 1	Origin 2
$(mn0)$ $(\bar{m}n0)$ $(nm0)$ $(\bar{n}m0)$ $(0mn)$ $(0\bar{m}n)$ $(0nm)$ $(0\bar{n}m)$ $(n0m)$ $(n0\bar{m})$ $(m0n)$ $(m0\bar{n})$	$P112/m$	$P112/n$ $(a + b + c)/4$	$P112/n$	$P112/m$	$P112/n$ $(a + b + c)/4$	$P112/n$
(hhl) $(\bar{h}hl)$ (hhl) $(\bar{h}hl)$ (lhh) $(\bar{l}h\bar{h})$ $(lh\bar{h})$ $(\bar{l}h\bar{h})$ (hll) $(\bar{h}l\bar{h})$ $(\bar{h}lh)$ $(hl\bar{h})$	$A112/m$	$A112/n$ $(a + b + c)/4$ $A112/a$ $(a + b + c)/4$ $A112/n$ $(a + b + c)/4$ $A112/a$ $(a + b + c)/4$ $A112/n$ $(a + b + c)/4$ $A112/a$ $(a + b + c)/4$	$A112/n$ $A112/a$ $A112/n$ $A112/a$ $A112/n$ $A112/a$ $A112/n$ $A112/a$	$A112/n$	$A112/m$ $(a + b + c)/4$ $A112/m$ $(3a + b + c)/4$ or $(a + 3b + c)/4$ $A112/m$ $(a + b + c)/4$ $A112/m$ $(a + 3b + c)/4$ or $(a + b + 3c)/4$ $A112/m$ $(a + b + c)/4$ $A112/m$ $(a + b + 3c)/4$ or $(3a + b + c)/4$	$A112/m$ $(a/2$ or $b/2)$ $A112/m$ $(b/2$ or $c/2)$ $A112/m$ $(c/2$ or $a/2)$