Cubic   6. SCANNING TABLES   Laue class $T_h - m\overline{3}$

Note: vectors along cubic diagonals [111], [1$\overline{1}\overline{1}$], [$\overline{1}$1$\overline{1}$] and [$\overline{1}\overline{1}$1] are abbreviated as $\tau = \mathbf{a} + \mathbf{b} + \mathbf{c}$, $\tau_1 = \mathbf{a} - \mathbf{b} - \mathbf{c}$, $\tau_2 = -\mathbf{a} + \mathbf{b} - \mathbf{c}$ and $\tau_3 = -\mathbf{a} - \mathbf{b} + \mathbf{c}$, respectively, for cubic groups.

Laue class $T_h - m\overline{3}$

Geometric class T – 23

No. 195   *P*23 T^1

$$\mathcal{G} = P23$$

Orientation orbit (*hkl*)	Conventional basis of the scanning group a′	b′	d	Scanning group $\mathcal{H}$	Linear orbit s**d**	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(001)	**a**	**b**	**c**	P222	0**d**, $\frac{1}{2}$**d**	p222	L19
(100)	**b**	**c**	**a**		[s**d**, −s**d**]	p112	L03
(010)	**c**	**a**	**b**				
(111)	**a** − **b**	**b** − **c**	τ	R3	[s**d**, $(s + \frac{1}{3})$**d**, $(s + \frac{2}{3})$**d**]	p3	L65
($\overline{1}\overline{1}$1)	**b** − **a**	−**b** − **c**	τ_3				
(1$\overline{1}\overline{1}$)	**a** + **b**	**c** − **b**	τ_1				
($\overline{1}$1$\overline{1}$)	−**a** − **b**	**b** + **c**	τ_2				

No. 196   *F*23 T^2

$$\mathcal{G} = F23$$

Orientation orbit (*hkl*)	Conventional basis of the scanning group a′	b′	d	Scanning group $\mathcal{H}$	Linear orbit s**d**	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(001)	**a**	**b**	**c**	F222	[0**d**, $\frac{1}{2}$**d**]	c222	L22
(100)	**b**	**c**	**a**		[$\frac{1}{4}$**d**, $\frac{3}{4}$**d**]	c222 [(**a**′ + **b**′)/4]	L22
(010)	**c**	**a**	**b**		[±s**d**, $(±s + \frac{1}{2})$**d**]	$\widehat{p}$112	L03
(111)	(**a** − **c**)/2	(**b** − **a**)/2	τ	R3	[s**d**, $(s + \frac{1}{3})$**d**, $(s + \frac{2}{3})$**d**]	p3	L65
($\overline{1}\overline{1}$1)	(−**a** − **c**)/2	(**a** − **b**)/2	τ_3				
(1$\overline{1}\overline{1}$)	(**a** + **c**)/2	(−**a** − **b**)/2	τ_1				
($\overline{1}$1$\overline{1}$)	(**c** − **a**)/2	(**a** + **b**)/2	τ_2				

No. 197   *I*23 T^3

$$\mathcal{G} = I23$$

Orientation orbit (*hkl*)	Conventional basis of the scanning group a′	b′	d	Scanning group $\mathcal{H}$	Linear orbit s**d**	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(001)	**a**	**b**	**c**	I222	[0**d**, $\frac{1}{2}$**d**]	p222	L19
(100)	**b**	**c**	**a**		[$\frac{1}{4}$**d**, $\frac{3}{4}$**d**]	p2₁2₁2	L21
(010)	**c**	**a**	**b**		[±s**d**, $(±s + \frac{1}{2})$**d**]	p112	L03
(111)	**a** − **c**	**b** − **a**	$\tau/2$	R3	[s**d**, $(s + \frac{1}{3})$**d**, $(s + \frac{2}{3})$**d**]	p3	L65
($\overline{1}\overline{1}$1)	−**a** − **c**	**a** − **b**	$\tau_3/2$				
(1$\overline{1}\overline{1}$)	**a** + **c**	−**a** − **b**	$\tau_1/2$				
($\overline{1}$1$\overline{1}$)	**c** − **a**	**a** + **b**	$\tau_2/2$				

Auxiliary tables for Laue class $T_h - m\overline{3}$

Centring types P and I

Orientation orbit (hkl)	Conventional basis of the scanning group $\mathbf{a}'$ $\mathbf{b}'$ $\mathbf{d}$			Auxiliary basis of the scanning group $\widehat{\mathbf{a}}$ $\widehat{\mathbf{b}}$ $\widehat{\mathbf{c}}$		
$(mn0)$	$\mathbf{c}$	$n\mathbf{a} - m\mathbf{b}$	$p\mathbf{a} + q\mathbf{b}$	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$
$(\overline{m}n0)$	$\mathbf{c}$	$n\mathbf{a} + m\mathbf{b}$	$-p\mathbf{a} + q\mathbf{b}$			
$(0mn)$	$\mathbf{a}$	$n\mathbf{b} - m\mathbf{c}$	$p\mathbf{b} + q\mathbf{c}$	$\mathbf{b}$	$\mathbf{c}$	$\mathbf{a}$
$(0\overline{m}n)$	$\mathbf{a}$	$n\mathbf{b} + m\mathbf{c}$	$-p\mathbf{b} + q\mathbf{c}$			
$(n0m)$	$\mathbf{b}$	$n\mathbf{c} - m\mathbf{a}$	$p\mathbf{c} + q\mathbf{a}$	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{b}$
$(n0\overline{m})$	$\mathbf{b}$	$n\mathbf{c} + m\mathbf{a}$	$-p\mathbf{c} + q\mathbf{a}$			

Arithmetic classes $23P$ and $23I$

Serial No.	195	198	197	199
Group type	T^1	T^4	T^3	T^5
Group	$P23$	$P2_13$	$I23$	$I2_13$
$(mn0)$	$P112$	$P112_1$	$I112$	$I112$
$(\overline{m}n0)$		$(\mathbf{a}/4)$		$(\mathbf{b}/4)$
$(0mn)$		$P112_1$		$I112$
$(0\overline{m}n)$		$(\mathbf{b}/4)$		$(\mathbf{c}/4)$
$(n0m)$		$P112_1$		$I112$
$(n0\overline{m})$		$(\mathbf{c}/4)$		$(\mathbf{a}/4)$

Arithmetic classes $m\overline{3}P$ and $m\overline{3}I$

Serial No.	200	201		205	204	206
Group type	T_h^1	T_h^2		T_h^6	T_h^5	T_h^7
Group	$Pm\overline{3}$	$Pn\overline{3}$		$Pa\overline{3}$	$Im\overline{3}$	$Ia\overline{3}$
		Origin 1	Origin 2			
$(mn0)$	$P112/m$	$P112/n$	$P112/n$	$P112_1/a$	$I112/m$	$I112/b$
$(\overline{m}n0)$		$(\mathbf{a} + \mathbf{b} + \mathbf{c})/4$				
$(0mn)$						
$(0\overline{m}n)$						
$(n0m)$						
$(n0\overline{m})$						