1. SUBPERIODIC GROUP TABLES: FRIEZE-GROUP, ROD-GROUP AND LAYER-GROUP TYPES

Table 1.2.1.1. *Classification of layer groups*

Bold or bold underlined symbols indicate Laue groups. Bold underlined point groups are also lattice point symmetries (holohedries).

Two-dimensional Bravais system	Symbol	Three-dimensional crystal system	Crystallographic point groups	No. of layer-group types	Restrictions on conventional coordinate system	Cell parameters to be determined	Bravais lattice
Oblique	*m*	Triclinic	1, $\bar{\mathbf{1}}$	2	None	*a*, *b*, γ†	*mp*
		Monoclinic	2, *m*, **2/*m***	5	$\alpha = \beta = 90°$		
Rectangular	*o*			11	$\beta = \gamma = 90°$	*a*, *b*	*op*
		Orthorhombic	222, 2*mm*, ***mmm***	30	$\alpha = \beta = \gamma = 90°$		*oc*
Square	*t*	Tetragonal	4, $\bar{4}$, **4/*m***	16	$a = b$	*a*	*tp*
			422, 4*mm*, $\bar{4}$2*m*, **4/*mmm***		$\alpha = \beta = \gamma = 90°$		
Hexagonal	*h*	Trigonal	3, $\bar{\mathbf{3}}$	8	$a = b$	*a*	*hp*
			32, 3*m*, $\bar{\mathbf{3}}$***m***				
		Hexagonal	6, $\bar{6}$, **6/*m***	8	$\gamma = 120°$		
			622, 6*mm*, $\bar{6}$*m*2, **6/*mmm***		$\alpha = \beta = 90°$		

† This angle is conventionally taken to be non-acute, *i.e.* $\geq 90°$.

Table 1.2.1.2. *Classification of rod groups*

Bold symbols indicate Laue groups.

Three-dimensional crystal system	Crystallographic point groups	No. of rod-group types	Restrictions on conventional coordinate system
Triclinic	1, $\bar{\mathbf{1}}$	2	None
Monoclinic (inclined)	2, *m*, **2/*m***	5	$\beta = \gamma = 90°$
Monoclinic (orthogonal)		5	$\alpha = \beta = 90°$
Orthorhombic	222, 2*mm*, ***mmm***	10	$\alpha = \beta = \gamma = 90°$
Tetragonal	4, $\bar{4}$, **4/*m***	19	
	422, 4*mm*, $\bar{4}$2*m*, **4/*mmm***		
Trigonal	3, $\bar{\mathbf{3}}$	11	$\alpha = \beta = 90$, $\gamma = 120°$
	32, 3*m*, $\bar{\mathbf{3}}$***m***		
Hexagonal	6, $\bar{6}$, **6/*m***	23	
	622, 6*mm*, $\bar{6}$*m*2, **6/*mmm***		

Table 1.2.1.3. *Classification of frieze groups*

Bold symbols indicate Laue groups.

Two-dimensional crystal system	Crystallographic point groups	No. of frieze-group types	Restrictions on conventional coordinate system
Oblique	1, **2**	2	None
Rectangular	*m*, ***2mm***	5	$\gamma = 90°$

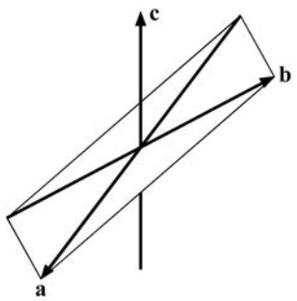

Fig. 1.2.1.1. Monoclinic/inclined basis vectors. For the monoclinic/inclined subdivision, $\beta = \gamma = 90°$ and the plane containing the **a** and **b** non-lattice basis vectors is *inclined* with respect to the lattice basis vector **c**.

their one-dimensional lattice by **c**, and for frieze groups with their one-dimensional lattice by **a**.

The selection of a crystallographic coordinate system is not unique. Following *IT* A (1983), we choose *conventional crystallographic coordinate systems* which have a right-handed set of basis vectors and such that symmetry of the subperiodic groups is best displayed. The conventional crystallographic coordinate systems used in the standard settings are given in the sixth column of Table 1.2.1.1 for the layer groups, and the fourth columns of Tables 1.2.1.2 and 1.2.1.3 for the rod groups and frieze groups, respectively. The crystallographic origin is conventionally chosen at a centre of symmetry or at a point of high site symmetry (see Section 1.2.7).

references