# $Imm2$ No. 44 $C_{2v}^{20}$

| | Axes | Coordinates | Wyckoff positions $2a$ | $2b$ | $4c$ | $4d$ | $8e$ |
|---|---|---|---|---|---|---|---|
| **I Maximal *translationengleiche* subgroups** | | | | | | | |
| [2] $Im11$ (8) | | | $2a$ | $2a$ | $4b$ | $2\times 2a$ | $2\times 4b$ |
| $\widehat{=}\, I1m1$ | | | | | | | |
| $\widehat{=}\, C1m1$ | $-\mathbf{b}-\mathbf{c}, \mathbf{a}, \mathbf{c}$ | $-y,x,-y+z$ | | | | | |
| [2] $I1m1$ (8) | | | $2a$ | $2a$ | $2\times 2a$ | $4b$ | $2\times 4b$ |
| [2] $I112$ (5) | | | $2a$ | $2b$ | $4c$ | $4c$ | $2\times 4c$ |
| **II Maximal *klassengleiche* subgroups** | | | | | | | |
| **Loss of centring translations** | | | | | | | |
| [2] $Pnn2$ (34) | | | $2a$ | $2b$ | $4c$ | $4c$ | $2\times 4c$ |
| [2] $Pmn2_1$ (31) | | $x,y+\frac{1}{4},z$ | $2a$ | $2a$ | $4b$ | $2\times 2a$ | $2\times 4b$ |
| [2] $Pnm2_1$ (31) | | $x+\frac{1}{4},y,z$ | $2a$ | $2a$ | $2\times 2a$ | $4b$ | $2\times 4b$ |
| $\widehat{=}\, Pmn2_1$ | $\mathbf{b}, \mathbf{a}, -\mathbf{c}$ | $y,x+\frac{1}{4},-z$ | | | | | |
| [2] $Pmm2$ (25) | | | $1a$; $1d$ | $1b$; $1c$ | $2e$; $2f$ | $2g$; $2h$ | $2\times 4i$ |
| **Enlarged unit cell, isomorphic** | | | | | | | |
| [3] $Imm2$ | $3\mathbf{a}, \mathbf{b}, \mathbf{c}$ | $\frac{1}{3}x,y,z$; $\pm(\frac{1}{3},0,0)$ | $2a$; $4c$ | $2b$; $4c$ | $3\times 4c$ | $4d$; $8e$ | $3\times 8e$ |
| [$p$] $Imm2$ | $p\mathbf{a}, \mathbf{b}, \mathbf{c}$ | $\frac{1}{p}x,y,z$; $+(\frac{u}{p},0,0)$ | $2a$; $\frac{p-1}{2}\times 4c$ | $2b$; $\frac{p-1}{2}\times 4c$ | $p\times 4c$ | $4d$; $\frac{p-1}{2}\times 8e$ | $p\times 8e$ |
| | $p=$ prime $>2$; $u=1,\ldots,p-1$ | | | | | | |
| [3] $Imm2$ | $\mathbf{a}, 3\mathbf{b}, \mathbf{c}$ | $x,\frac{1}{3}y,z$; $\pm(0,\frac{1}{3},0)$ | $2a$; $4d$ | $2b$; $4d$ | $4c$; $8e$ | $3\times 4d$ | $3\times 8e$ |
| [$p$] $Imm2$ | $\mathbf{a}, p\mathbf{b}, \mathbf{c}$ | $x,\frac{1}{p}y,z$; $+(0,\frac{u}{p},0)$ | $2a$; $\frac{p-1}{2}\times 4d$ | $2b$; $\frac{p-1}{2}\times 4d$ | $4c$; $\frac{p-1}{2}\times 8e$ | $p\times 4d$ | $p\times 8e$ |
| | $p=$ prime $>2$; $u=1,\ldots,p-1$ | | | | | | |
| [3] $Imm2$ | $\mathbf{a}, \mathbf{b}, 3\mathbf{c}$ | $x,y,\frac{1}{3}z$; $\pm(0,0,\frac{1}{3})$ | $3\times 2a$ | $3\times 2b$ | $3\times 4c$ | $3\times 4d$ | $3\times 8e$ |
| [$p$] $Imm2$ | $\mathbf{a}, \mathbf{b}, p\mathbf{c}$ | $x,y,\frac{1}{p}z$; $+(0,0,\frac{u}{p})$ | $p\times 2a$ | $p\times 2b$ | $p\times 4c$ | $p\times 4d$ | $p\times 8e$ |
| | $p=$ prime $>2$; $u=1,\ldots,p-1$ | | | | | | |

**Nonconventional settings**

interchange letters and sequences in Hermann–Mauguin symbols, axes and coordinates:

$I2mm$ $\quad C\to A \quad \mathbf{a}\to\mathbf{b}\to\mathbf{c}\to\mathbf{a} \quad x\to y\to z\to x$

$Im2m$ $\quad C\to B \quad \mathbf{a}\leftarrow\mathbf{b}\leftarrow\mathbf{c}\leftarrow\mathbf{a} \quad x\leftarrow y\leftarrow z\leftarrow x$