International Tables for Crystallography (2006). Vol. A1, Wyckoff relations for space group 21, pp. 479–480.

D_2^5 No. 20 $C222_1$

	Axes	Coordinates	Wyckoff positions $4a$	$4b$	$8c$
I Maximal *translationengleiche* subgroups					
[2] $C211$ (5)			$2a$; $2b$	$4c$	$2\times4c$
$\widehat{=}\,C121$	$-\mathbf{b}, \mathbf{a}, \mathbf{c}$	$-y,x,z$			
[2] $C121$ (5)		$x,y,z+\frac{1}{4}$	$4c$	$2a$; $2b$	$2\times4c$
[2] $P112_1$ (4)	$\frac{1}{2}(\mathbf{a}-\mathbf{b}), \frac{1}{2}(\mathbf{a}+\mathbf{b}), \mathbf{c}$	$x-y,x+y,z$	$2a$	$2a$	$2\times2a$
II Maximal *klassengleiche* subgroups					
Loss of centring translations					
[2] $P2_12_12_1$ (19)		$x+\frac{1}{4},y,z$	$4a$	$4a$	$2\times4a$
[2] $P22_12_1$ (18)		$x+\frac{1}{4},y,z$	$2a$; $2b$	$4c$	$2\times4c$
$\widehat{=}\,P2_12_12$	$\mathbf{b}, \mathbf{c}, \mathbf{a}$	$y,z,x+\frac{1}{4}$			
[2] $P2_122_1$ (18)		$x,y+\frac{1}{4},z+\frac{1}{4}$	$4c$	$2a$; $2b$	$2\times4c$
$\widehat{=}\,P2_12_12$	$\mathbf{c}, \mathbf{a}, \mathbf{b}$	$z+\frac{1}{4},x,y+\frac{1}{4}$			
[2] $P222_1$ (17)			$2a$; $2b$	$2c$; $2d$	$2\times4e$
Enlarged unit cell, isomorphic					
[3] $C222_1$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$	$\frac{1}{3}x,y,z$; $\pm(\frac{1}{3},0,0)$	$3\times4a$	$4b$; $8c$	$3\times8c$
[p] $C222_1$	$p\mathbf{a}, \mathbf{b}, \mathbf{c}$	$\frac{1}{p}x,y,z$; $+(\frac{u}{p},0,0)$	$p\times4a$	$4b$; $\frac{1}{2}(p-1)\times8c$	$p\times8c$
	$p=$ prime >2; $u=1,\ldots,p-1$				
[3] $C222_1$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$	$x,\frac{1}{3}y,z$; $\pm(0,\frac{1}{3},0)$	$4a$; $8c$	$3\times4b$	$3\times8c$
[p] $C222_1$	$\mathbf{a}, p\mathbf{b}, \mathbf{c}$	$x,\frac{1}{p}y,z$; $+(0,\frac{u}{p},0)$	$4a$; $\frac{1}{2}(p-1)\times8c$	$p\times4b$	$p\times8c$
	$p=$ prime >2; $u=1,\ldots,p-1$				
[3] $C222_1$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	$x,y,\frac{1}{3}z$; $\pm(0,0,\frac{1}{3})$	$4a$; $8c$	$4b$; $8c$	$3\times8c$
[p] $C222_1$	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	$x,y,\frac{1}{p}z$; $+(0,0,\frac{u}{p})$	$4a$; $\frac{1}{2}(p-1)\times8c$	$4b$; $\frac{1}{2}(p-1)\times8c$	$p\times8c$
	$p=$ prime >2; $u=1,\ldots,p-1$				

Nonconventional settings

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

$A2_122$ $\quad C\to A \quad \mathbf{a}\to\mathbf{b}\to\mathbf{c}\to\mathbf{a} \quad x\to y\to z\to x$

$B22_12$ $\quad C\to B \quad \mathbf{a}\leftarrow\mathbf{b}\leftarrow\mathbf{c}\leftarrow\mathbf{a} \quad x\leftarrow y\leftarrow z\leftarrow x$

CONTINUED (*from next page*)

No. 21 $C222$

	Axes	Coordinates	Wyckoff positions $2a$	$2b$	$2c$	$2d$	$4e$	$4f$	$4g$	$4h$	$4i$	$4j$	$4k$	$8l$
[2] $C222$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	$x,y,\frac{1}{2}z$; $+(0,0,\frac{1}{2})$	$2a$; $2d$	$2b$; $2c$	$4j$	$4i$	$4e$; $4f$	$8l$	$4g$; $4h$	$8l$	$2\times4i$	$2\times4j$	$2\times4k$	$2\times8l$
[2] $C222$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	$x,y,\frac{1}{2}z+\frac{1}{4}$; $+(0,0,\frac{1}{2})$	$4i$	$4j$	$2b$; $2c$	$2a$; $2d$	$8l$	$4e$; $4f$	$8l$	$4g$; $4h$	$2\times4i$	$2\times4j$	$2\times4k$	$2\times8l$
[3] $C222$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	$x,y,\frac{1}{3}z$; $\pm(0,0,\frac{1}{3})$	$2a$; $4i$	$2b$; $4j$	$2c$; $4j$	$2d$; $4i$	$4e$; $8l$	$4f$; $8l$	$4g$; $8l$	$4h$; $8l$	$3\times4i$	$3\times4j$	$3\times4k$	$3\times8l$
[p] $C222$	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	$x,y,\frac{1}{p}z$; $+(0,0,\frac{u}{p})$	$2a$; $\frac{p-1}{2}\times4i$	$2b$; $\frac{p-1}{2}\times4j$	$2c$; $\frac{p-1}{2}\times4j$	$2d$; $\frac{p-1}{2}\times4i$	$4e$; $\frac{p-1}{2}\times8l$	$4f$; $\frac{p-1}{2}\times8l$	$4g$; $\frac{p-1}{2}\times8l$	$4h$; $\frac{p-1}{2}\times8l$	$p\times4i$	$p\times4j$	$p\times4k$	$p\times8l$
	$p=$ prime >2; $u=1,\ldots,p-1$													

Nonconventional settings

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

$A222$ $\quad C\to A \quad \mathbf{a}\to\mathbf{b}\to\mathbf{c}\to\mathbf{a} \quad x\to y\to z\to x$

$B222$ $\quad C\to B \quad \mathbf{a}\leftarrow\mathbf{b}\leftarrow\mathbf{c}\leftarrow\mathbf{a} \quad x\leftarrow y\leftarrow z\leftarrow x$

	Axes	Coordinates	Wyckoff positions $2a$	$2b$	$2c$	$2d$	$4e$	$4f$	$4g$	$4h$	$4i$ $4k$	$4j$ $8l$
I Maximal *translationengleiche* subgroups												
[2] $C211$ (5) $\widehat{=}C121$	$-\mathbf{b}, \mathbf{a}, \mathbf{c}$	$-y,x,z$	$2a$	$2a$	$2b$	$2b$	$2\times2a$	$2\times2b$	$4c$	$4c$	$4c$ $4c$	$4c$ $2\times4c$
[2] $C121$ (5)			$2a$	$2a$	$2b$	$2b$	$4c$	$4c$	$2\times2a$	$2\times2b$	$4c$ $4c$	$4c$ $2\times4c$
[2] $P112$ (3)	$\frac{1}{2}(\mathbf{a}-\mathbf{b})$, $\frac{1}{2}(\mathbf{a}+\mathbf{b})$, $\mathbf{c}$	$x-y,x+y,z$	$1a$	$1d$	$1d$	$1a$	$2e$	$2e$	$2e$	$2e$	$2\times1a$ $1b;1c$	$2\times1d$ $2\times2e$
II Maximal *klassengleiche* subgroups												
Loss of centring translations												
[2] $P2_12_12$ (18)			$2a$	$2b$	$2b$	$2a$	$4c$	$4c$	$4c$	$4c$	$2\times2a$ $4c$	$2\times2b$ $2\times4c$
[2] $P2_122$ (17) $\widehat{=}P222_1$	$\mathbf{b}, \mathbf{c}, \mathbf{a}$	$x,y+\frac{1}{4},z$ $y+\frac{1}{4},z,x$	$2a$	$2a$	$2b$	$2b$	$4e$	$4e$	$2\times2a$	$2\times2b$	$4e$ $2c;2d$	$4e$ $2\times4e$
[2] $P22_12$ (17) $\widehat{=}P222_1$	$\mathbf{c}, \mathbf{a}, \mathbf{b}$	$x+\frac{1}{4},y+\frac{1}{4},z$ $z,x+\frac{1}{4},y+\frac{1}{4}$	$2c$	$2c$	$2d$	$2d$	$2\times2c$	$2\times2d$	$4e$	$4e$	$4e$ $2a;2b$	$4e$ $2\times4e$
[2] $P222$ (16)			$1a;1e$	$1b;1c$	$1f;1g$	$1d;1h$	$2i;2k$	$2j;2l$	$2m;2o$	$2n;2p$	$2q;2t$ $4u$	$2r;2s$ $2\times4u$
Enlarged unit cell, non-isomorphic												
[2] $I2_12_12_1$ (24)	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	$x+\frac{1}{4},y,\frac{1}{2}z;$ $+(0,0,\frac{1}{2})$	$4b$	$4b$	$4a$	$4a$	$8d$	$2\times4a$	$2\times4b$	$8d$	$8d$ $2\times4c$	$8d$ $2\times8d$
[2] $I2_12_12_1$ (24)	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	$x+\frac{1}{4},y,\frac{1}{2}z+\frac{1}{4};$ $+(0,0,\frac{1}{2})$	$4a$	$4a$	$4b$	$4b$	$2\times4a$	$8d$	$8d$	$2\times4b$	$8d$ $2\times4c$	$8d$ $2\times8d$
[2] $I222$ (23)	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	$x,y,\frac{1}{2}z;$ $+(0,0,\frac{1}{2})$	$2a;2c$	$2b;2d$	$4j$	$4i$	$4e;4f$	$8k$	$4g;4h$	$8k$	$2\times4i$ $8k$	$2\times4j$ $2\times8k$
[2] $I222$ (23)	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	$x,y,\frac{1}{2}z+\frac{1}{4};$ $+(0,0,\frac{1}{2})$	$4i$	$4j$	$2b;2d$	$2a;2c$	$8k$	$4e;4f$	$8k$	$4g;4h$	$2\times4i$ $8k$	$2\times4j$ $2\times8k$
[2] $C222_1$ (20)	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	$x,y,\frac{1}{2}z;$ $+(0,0,\frac{1}{2})$	$4a$	$4a$	$4b$	$4b$	$2\times4a$	$8c$	$8c$	$2\times4b$	$8c$ $8c$	$8c$ $2\times8c$
[2] $C222_1$ (20)	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	$x,y,\frac{1}{2}z+\frac{1}{4};$ $+(0,0,\frac{1}{2})$	$4b$	$4b$	$4a$	$4a$	$8c$	$2\times4a$	$2\times4b$	$8c$	$8c$ $8c$	$8c$ $2\times8c$
Enlarged unit cell, isomorphic												
[3] $C222$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$	$\frac{1}{3}x,y,z;\pm(\frac{1}{3},0,0)$	$2a;4e$	$2b;4e$	$2c;4f$	$2d;4f$	$3\times4e$	$3\times4f$	$4g;8l$	$4h;8l$	$4i;8l$ $4k;8l$	$4j;8l$ $3\times8l$
[p] $C222$ p = prime >2;	$p\mathbf{a}, \mathbf{b}, \mathbf{c}$	$\frac{1}{p}x,y,z;+(\frac{u}{p},0,0)$ $u=1,\ldots,p-1$	$2a;$ $\frac{p-1}{2}\times4e$	$2b;$ $\frac{p-1}{2}\times4e$	$2c;$ $\frac{p-1}{2}\times4f$	$2d;$ $\frac{p-1}{2}\times4f$	$p\times4e$	$p\times4f$	$4g;$ $\frac{p-1}{2}\times8l$	$4h;$ $\frac{p-1}{2}\times8l$	$4i;$ $\frac{p-1}{2}\times8l$ $4k;$ $\frac{p-1}{2}\times8l$	$4j;$ $\frac{p-1}{2}\times8l$ $p\times8l$
[3] $C222$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$	$x,\frac{1}{3}y,z;\pm(0,\frac{1}{3},0)$	$2a;4g$	$2b;4g$	$2c;4h$	$2d;4h$	$4e;8l$	$4f;8l$	$3\times4g$	$3\times4h$	$4i;8l$ $4k;8l$	$4j;8l$ $3\times8l$
[p] $C222$ p = prime >2;	$\mathbf{a}, p\mathbf{b}, \mathbf{c}$	$x,\frac{1}{p}y,z;+(0,\frac{u}{p},0)$ $u=1,\ldots,p-1$	$2a;$ $\frac{p-1}{2}\times4g$	$2b;$ $\frac{p-1}{2}\times4g$	$2c;$ $\frac{p-1}{2}\times4h$	$2d;$ $\frac{p-1}{2}\times4h$	$4e;$ $\frac{p-1}{2}\times8l$	$4f;$ $\frac{p-1}{2}\times8l$	$p\times4g$	$p\times4h$	$4i;$ $\frac{p-1}{2}\times8l$ $4k;$ $\frac{p-1}{2}\times8l$	$4j;$ $\frac{p-1}{2}\times8l$ $p\times8l$

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