The group G is isomorphic to the group labelled by [72, 28] in the Small Groups library. Ordinary character table of  $G\cong C3$  x D24:

| 1,  | $\frac{1}{a}$ | $\frac{1}{4a}$ $\frac{2}{a}$ | 2h       | h 20      | 2 3 a          | 12a                              | 6a        | 12b                      | 3b           | 12c            | -6b          | 6c             | 6d             | 3c          | 12d                           | 6e          | 12e                          | 3d           | 12f           | 6f               | 6q             | 6h             | 3e          | 12g                           | 6i          | 12h                         |
|---|---------------|------------------------------|----------|-----------|----------------|----------------------------------|-----------|--------------------------|--------------|----------------|--------------|----------------|----------------|-------------|-------------------------------|-------------|------------------------------|--------------|---------------|------------------|----------------|----------------|-------------|-------------------------------|-------------|-----------------------------|
| ν <sub>1</sub> 1  | <u>и</u> э    | $\frac{1}{1}$ 1              | 1        | 1         | $\frac{3a}{1}$ | 124                              | 1         | 120                      | 1            | 1              | 1            | 1              | 1              | 1           | 124                           | 1           | 126                          | 1 1          | 121           | 1                | 1 1            | 1              | 1           | 129                           | 1           | 1                           |
| $\begin{bmatrix} \chi_1 \\ \chi_2 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ | L .           | -1 1                         | _1<br>_1 | 1 1       | 1              | -1                               | 1         | _1                       | 1            | _1<br>_1       | 1            | _1<br>_1       | 1              | 1           | _1                            | 1           | _1<br>_1                     | 1            | _1<br>_1      | 1                | _1<br>_1       | 1              | 1           | _1<br>1                       | 1           | _1                          |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$                                |               | -1 1<br>-1 1                 |          | 1 1<br>-1 | 1<br>1 1       | -1<br>-1                         | 1         | -1<br>-1                 | 1            | - <sub>1</sub> | 1            | - <sub>1</sub> | 1              | 1           |                               | 1           | - <u>1</u><br>1              | 1            | - <u>1</u>    | 1                | - <sub>1</sub> | _1<br>_1       | 1           |                               | 1           | 1                           |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$                                | L —           | -1 1<br>1 1                  | _1<br>_1 |           | _              | - <sub>1</sub>                   | 1         | - <sub>1</sub>           | 1            | -1<br>1        | 1            | 1              | - <sub>1</sub> | 1           | — <u>1</u>                    | 1           | -1<br>1                      | 1            | -1<br>1       | 1                | 1              | - <sub>1</sub> | 1           | — <u>1</u>                    | 1           | -1<br>1                     |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$                                | L .           | 1 1                          |          |           | l 1<br>1       | 1                                | 1         | 1                        | $E(2)^2$     | $E(2)^2$       | $E(2)^2$     | $-1$ $E(2)^2$  | $E(3)^2$       | $E(2)^2$    | $E(2)^2$                      | $E(2)^2$    | $\frac{1}{E(2)^2}$           | E(2)         | E(2)          | $\frac{1}{E(2)}$ | -1             | -1             | E(2)        | T (2)                         | E(2)        | T(2)                        |
| $\chi_5$ 1  |               | -1 1                         | -1       |           | 1              | -1                               | 1         | -1                       | $E(3)^2$     | $-E(3)^{2}$    | $E(3)^2$     | $-E(3)^{2}$    | · /            | $E(3)^2$    | $-E(3)^{2}$                   | $E(3)^2$    | $-E(3)^{2}$                  | E(3)         | -E(3)         | E(3)             | -E(3)          | E(3)           | E(3)        | -E(3)                         | E(3)        | -E(3)                       |
| $\chi_6$  |               | -1 1                         | -]       |           | 1              | -1                               | 1         | -1                       | E(3)         | -E(3)          | E(3)         | -E(3)          | E(3)           | E(3)        | -E(3)                         | E(3)        | -E(3)                        | $E(3)^2$     | $-E(3)^2$     | $E(3)^2$         | $-E(3)^{2}$    | $E(3)^2$       | $E(3)^2$    | $-E(3)^{2}$                   | $E(3)^2$    | $-E(3)^2$                   |
| $\chi_7$ 1  |               | -1 1                         | 1        | -1        | _              | -1                               | 1         | -1                       | $E(3)^2$     | $-E(3)^{2}$    | $E(3)^2$     | $E(3)^2$       | $-E(3)^2$      | $E(3)^2$    | $-E(3)^{2}$                   | $E(3)^2$    | $-E(3)^{2}$                  | E(3)         | -E(3)         | E(3)             | E(3)           | -E(3)          | E(3)        | -E(3)                         | E(3)        | -E(3)                       |
| $\chi_8$ 1  | L –           | -1 1                         | 1        | -         | _              | -1                               | 1         | -1                       | E(3)         | -E(3)          | E(3)         | E(3)           | -E(3)          | E(3)        | -E(3)                         | E(3)        | -E(3)                        | $E(3)^2$     | $-E(3)^{2}$   | $E(3)^2$         | $E(3)^2$       | $-E(3)^{2}$    | $E(3)^2$    | $-E(3)^{2}$                   | $E(3)^2$    | $-E(3)^2$                   |
| $\chi_9$ 1  | L .           | 1 1                          | -1       |           |                | 1                                | 1         | 1                        | $E(3)^2$     | $E(3)^2$       | $E(3)^2$     | $-E(3)^{2}$    | $-E(3)^2$      | $E(3)^{2}$  | $E(3)^2$                      | $E(3)^{2}$  | $E(3)^2$                     | E(3)         | E(3)          | E(3)             | -E(3)          | -E(3)          | E(3)        | E(3)                          | E(3)        | E(3)                        |
| $\chi_{10}$ 1   | L :           | 1 1                          | -1       | 1 - 1     | 1 1            | 1                                | 1         | 1                        | E(3)         | E(3)           | E(3)         | -E(3)          | -E(3)          | E(3)        | E(3)                          | E(3)        | E(3)                         | $E(3)^2$     | $E(3)^2$      | $E(3)^{2}$       | $-E(3)^{2}$    | $-E(3)^{2}$    | $E(3)^{2}$  | $E(3)^2$                      | $E(3)^{2}$  | $E(3)^2$                    |
| $ \chi_{11} $ 1   | L :           | 1 1                          | 1        | 1         | 1              | 1                                | 1         | 1                        | $E(3)^{2}$   | $E(3)^{2}$     | $E(3)^{2}$   | $E(3)^{2}$     | $E(3)^{2}$     | $E(3)^{2}$  | $E(3)^{2}$                    | $E(3)^{2}$  | $E(3)^{2}$                   | E(3)         | E(3)          | E(3)             | E(3)           | E(3)           | E(3)        | E(3)                          | E(3)        | E(3)                        |
| $ \chi_{12} $ 1   | L             | 1 1                          | 1        | 1         | 1              | 1                                | 1         | 1                        | E(3)         | E(3)           | E(3)         | E(3)           | E(3)           | E(3)        | E(3)                          | E(3)        | E(3)                         | $E(3)^{2}$   | $E(3)^{2}$    | $E(3)^{2}$       | $E(3)^{2}$     | $E(3)^{2}$     | $E(3)^{2}$  | $E(3)^{2}$                    | $E(3)^{2}$  | $E(3)^2$                    |
| $\chi_{13}$ 2   |               | -2 2                         |          |           | -1             | 1                                | -1        | 1                        | 2            | -2             | 2            | 0              | 0              | -1          | 1                             | -1          | 1                            | 2            | -2            | 2                | 0              | 0              | -1          | 1                             | -1          | 1                           |
| $ \chi_{14} $ 2   | 2 :           | 2 2                          | 0        | 0         | -1             | -1                               | -1        | -1                       | 2            | 2              | 2            | 0              | 0              | -1          | -1                            | -1          | -1                           | 2            | 2             | 2                | 0              | 0              | -1          | -1                            | -1          | -1                          |
| $\chi_{15}$ 2   | 2 (           | 0 - 2                        | 2 0      | 0         | 2              | 0                                | -2        | 0                        | 2            | 0              | -2           | 0              | 0              | 2           | 0                             | -2          | 0                            | 2            | 0             | -2               | 0              | 0              | 2           | 0                             | -2          | 0                           |
| $\chi_{16}$ 2   | 2 –           | -2 2                         | 0        | 0         | -1             | 1                                | -1        | 1                        | $2 * E(3)^2$ | $-2 * E(3)^2$  | $2 * E(3)^2$ | 0              | 0              | $-E(3)^2$   | $E(3)^{2}$                    | $-E(3)^{2}$ | $E(3)^{2}$                   | 2 * E(3)     | -2 * E(3)     | 2 * E(3)         | 0              | 0              | -E(3)       | E(3)                          | -E(3)       | E(3)                        |
| $ \chi_{17} $ 2   | 2 –           | -2 2                         | 0        | 0         | -1             | 1                                | -1        | 1                        | 2 * E(3)     | -2 * E(3)      | 2 * E(3)     | 0              | 0              | -E(3)       | E(3)                          | -E(3)       | E(3)                         | $2 * E(3)^2$ | $-2 * E(3)^2$ | $2 * E(3)^2$     | 0              | 0              | $-E(3)^{2}$ | $E(3)^{2}$                    | $-E(3)^{2}$ | $E(3)^2$                    |
| $\chi_{18}$ 2   | 2 :           | 2  2                         | 0        | 0         | -1             | -1                               | -1        | -1                       | $2 * E(3)^2$ | $2 * E(3)^2$   | $2 * E(3)^2$ | 0              | 0              | $-E(3)^{2}$ | $-E(3)^{2}$                   | $-E(3)^{2}$ | $-E(3)^2$                    | 2 * E(3)     | 2 * E(3)      | 2 * E(3)         | 0              | 0              | -E(3)       | -E(3)                         | -E(3)       | -E(3)                       |
| $\chi_{19}$ 2   | 2 :           | 2  2                         | 0        | 0         | -1             | -1                               | -1        | -1                       | 2 * E(3)     | 2 * E(3)       | 2 * E(3)     | 0              | 0              | -E(3)       | -E(3)                         | -E(3)       | -E(3)                        | $2*E(3)^2$   | $2*E(3)^2$    | $2*E(3)^2$       | 0              | 0              | $-E(3)^2$   | $-E(3)^{2}$                   | $-E(3)^{2}$ | $-E(3)^2$                   |
| $\chi_{20}$ 2   | 2 (           | $0 - \frac{1}{2}$            | 2 0      | 0         | 2              | 0                                | -2        | 0                        | $2*E(3)^2$   | 0              | $-2*E(3)^2$  | 0              | 0              | $2*E(3)^2$  | 0                             | $-2*E(3)^2$ | 0                            | 2 * E(3)     | 0             | -2 * E(3)        | 0              | 0              | 2 * E(3)    | 0                             | -2*E(3)     | 0                           |
| $ \chi_{21} $ 2   | 2 (           | $0 - \frac{1}{2}$            | 2 0      | 0         | 2              | 0                                | -2        | 0                        | 2 * E(3)     | 0              | -2*E(3)      | 0              | 0              | 2 * E(3)    | 0                             | -2*E(3)     | 0                            | $2*E(3)^2$   | 0             | $-2*E(3)^2$      | 0              | 0              | $2*E(3)^2$  | 0                             | $-2*E(3)^2$ | 0                           |
| $\chi_{22}$ 2   | 2 (           | $0 - \frac{1}{2}$            | 2 0      | 0         | -1             | $-E(12)^7 + E(12)^2$             | $^{11}$ 1 | $E(12)^7 - E(12)^{11}$   | 2            | 0              | -2           | 0              | 0              | -1          | $-E(12)^7 + E(12)^{11}$       | 1           | $E(12)^7 - E(12)^{11}$       | 2            | 0             | -2               | 0              | 0              | -1          | $-E(12)^7 + E(12)^{11}$       | 1           | $E(12)^7 - E(12)^{11}$      |
| $\chi_{23}$ 2   | 2 (           | $0 - \frac{1}{2}$            | 2 0      | 0         | -1             | $E(12)^{7} - E(12)^{11}$         | $^{1}$ 1  | $-E(12)^7 + E(12)^{11}$  | 2            | 0              | -2           | 0              | 0              | -1          | $E(12)^{7} - E(12)^{11}$      | 1           | $-E(12)^7 + E(12)^{11}$      | 2            | 0             | -2               | 0              | 0              | -1          | $E(12)^{7} - E(12)^{11}$      | 1           | $-E(12)^7 + E(12)^{11}$     |
| $\left \begin{array}{c c} \chi_{24} \end{array}\right  2$                             | 2 (           |                              |          |           |                | $-\dot{E}(12)^7 + \dot{E}(12)^2$ |           | $E(12)^{7} - E(12)^{11}$ | $2 * E(3)^2$ | 0              | $-2*E(3)^2$  | 0              | 0              | $-E(3)^2$   | $2*E(12)^7+E(12)^{11}$        | $E(3)^{2}$  | $-2*E(12)^7 - E(12)^{11}$    | 2*E(3)       | 0             | -2 * E(3)        | 0              | 0              | -E(3)       | $-E(12)^{7} - 2 * E(12)^{11}$ | E(3)        | $E(12)^7 + 2 * E(12)^{11}$  |
| $\begin{vmatrix} \chi_{24} \\ \chi_{25} \end{vmatrix}$ 2                              | 2 (           |                              |          |           |                | $-E(12)^7 + E(12)^3$             |           | $E(12)^7 - E(12)^{11}$   | 2*E(3)       | 0              | -2*E(3)      | 0              | 0              | -E(3)       | $-E(12)^{7} - 2 * E(12)^{11}$ | E(3)        | $E(12)^{7} + 2 * E(12)^{11}$ | $2*E(3)^{2}$ | 0             | $-2*E(3)^2$      | 0              | 0              | $-E(3)^{2}$ |                               | $E(3)^{2}$  | $-2*E(12)^7 - E(12)^{11}$   |
| $\begin{vmatrix} \chi_{26} \\ \chi_{26} \end{vmatrix}$ 2                              | 2 (           |                              |          |           |                | $E(12)^{7} - E(12)^{11}$         |           | $-E(12)^7 + E(12)^{11}$  |              | 0              | $-2*E(3)^2$  | 0              | 0              | $-E(3)^{2}$ | $-2*E(12)^7 - E(12)^{11}$     | $E(3)^{2}$  | $2*E(12)^7 + E(12)^{11}$     | 2 * E(3)     | 0             | -2*E(3)          | 0              | 0              | -E(3)       | $E(12)^7 + 2 * E(12)^{11}$    | E(3)        | $-E(12)^7 - 2 * E(12)^{11}$ |
| $\begin{vmatrix} \chi_{20} \\ \chi_{27} \end{vmatrix}$ 2                              | 2             |                              |          | 0         |                | $E(12)^7 - E(12)^{11}$           |           | $-E(12)^7 + E(12)^{11}$  |              | 0              | -2*E(3)      | 0              | 0              | -E(3)       | $E(12)^7 + 2 * E(12)^{11}$    | E(3)        | $-E(12)^7 - 2 * E(12)^{11}$  |              | Õ             | $-2*E(3)^2$      | 0              | 0              | $-E(3)^2$   | $-2*E(12)^7 - E(12)^{11}$     | $E(3)^2$    | $2*E(12)^7 + E(12)^{11}$    |

Trivial source character table of  $G \cong C3 \times D24$  at p = 2:

| Normalisers $N_i$   | $N_1$                        |                       |                 | $N_2$                 |                | $N_3$                |                              | $N_4$            |                   | $N_5$            |                     |                             | $N_6$              | $N_7$            |                   | $N_8$           |
|---|------------------------------|-----------------------|-----------------|-----------------------|----------------|----------------------|------------------------------|------------------|-------------------|------------------|---------------------|-----------------------------|--------------------|------------------|-------------------|-----------------|
| p-subgroups of $G$ up to conjugacy in $G$   | $P_1$                        |                       |                 | $P_2$                 |                | $P_3$                |                              | $P_4$            |                   | $P_5$            |                     |                             | $P_6$              | $P_7$            |                   | $P_8$           |
| Representatives $n_j \in N_i$   | 3c $3d$                      | 3e $1a$               | a = 3b = 3a     | 3d $3c$               | 3e             | 1a $3a$              | 3b $1a$                      | 3a $3b$          | 1a $3b$           | 3a $3d$          | 3c 3                | e 1a 3a                     | 3b                 | 1a $3a$          | 3b $1a$           | 3a 	 3b         |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 2 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \\ 8  8  8  8  8  8  8  8  8  8$  | 8 8                          | 8 0                   | 0 0             | 0 0                   | 0              | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0 0                         | 0                  | 0 0              | 0 0               | 0 0             |
| $ \left  \begin{array}{cccccccccccccccccccccccccccccccccccc$  | -4 8                         | $-4 \qquad \boxed{0}$ | 0 0             | 0 0                   | 0              | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $8*E(3)^2$ $8*E(3)$          | 8 * E(3)   0          | 0 0             | 0 0                   | 0              | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
|   |                              | $*E(3)^2 \mid 0$      | 0 0             | 0 0                   | 0              | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
|   |                              | $4 * E(3)^2 \mid 0$   | 0 0             | 0 0                   | 0              | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $ \left[ \begin{array}{cccccccccccccccccccccccccccccccccccc$  | $-4 * E(3)^2 8 * E(3) -$     | 4*E(3) 0              | 0 0             | 0 0                   | 0              | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $\left[1 \cdot \chi_{1} + 1 \cdot \chi_{2} + 1 \cdot \chi_{3} + 1 \cdot \chi_{4} + 0 \cdot \chi_{5} + 0 \cdot \chi_{6} + 0 \cdot \chi_{7} + 0 \cdot \chi_{8} + 0 \cdot \chi_{9} + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27}\right]  4  4  4  4  4  4  4  4  4  $  | 4 4                          | 4 4                   | 4 4             | 4 4                   | 4              | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0 0                         | 0                  | 0 0              | 0 0               | 0 0             |
| $ \left  \begin{array}{cccccccccccccccccccccccccccccccccccc$  | -2 4                         | -2 4                  | $4 \qquad -2$   | $4 \qquad -2$         | -2             | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $4*E(3)^2$ $4*E(3)$          | 4*E(3) 4              | $4*E(3)^2$ 4 4  | $*E(3) \qquad 4*E(3)$ | (4*E(3))       | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $4 * E(3)$ $4 * E(3)^2$ 4    | $*E(3)^2   4$         | 4*E(3) 4 4:     | $(E(3)^2 	 4*E(3)^2)$ | $4*E(3)^2$     | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $-2 * E(3) 	 4 * E(3)^2 	 -$ | _ ( )   -             | 4*E(3) -2 4:    | (-)                   | 3) $-2*E(3)^2$ | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $ \left[ \begin{array}{cccccccccccccccccccccccccccccccccccc$  | $-2 * E(3)^2 	 4 * E(3) 	 -$ | 2*E(3) 4              | $4*E(3)^2 -2 4$ | *E(3) -2*E(3)         | (-2*E(3)]      | 0 0                  | 0 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $1 \cdot \chi_{1} + 0 \cdot \chi_{2} + 1 \cdot \chi_{3} + 0 \cdot \chi_{4} + 0 \cdot \chi_{5} + 0 \cdot \chi_{6} + 0 \cdot \chi_{7} + 0 \cdot \chi_{8} + 0 \cdot \chi_{9} + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 1 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} = 4$  | 4 4                          | 4 0                   | 0 0             | 0 0                   | 0              | $2 \qquad 2$         | 2 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0 0                         | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   |                              | 4 * E(3) = 0          | 0 0             | 0 0                   |                | $2  2 * E(3)^2  2 *$ | \ /                          | 0 0              | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $\left[ \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $4 * E(3)$ $4 * E(3)^2$ 4    | $*E(3)^2 = 0$         | 0 0             | 0 0                   | 0              | 2  2 * E(3)  2 *     | $E(3)^2 \mid 0$              | 0 0              | 0 0               | 0 0              | 0 (                 | 0 0                         | 0                  | 0 0              | 0 0               | 0 0             |
| $1 \cdot \chi_{1} + 1 \cdot \chi_{2} + 0 \cdot \chi_{3} + 0 \cdot \chi_{4} + 0 \cdot \chi_{5} + 0 \cdot \chi_{6} + 0 \cdot \chi_{7} + 0 \cdot \chi_{8} + 0 \cdot \chi_{9} + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 1 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \end{vmatrix} 4 \qquad 4$   | 4 4                          | 4 0                   | 0 0             | 0 0                   | 0              | 0 0                  | 0 2                          | 2 2              | 0 0               | 0 0              | 0 (                 | 0 0                         | 0                  | 0 0              | 0 0               | 0 0             |
| $ \left  \begin{array}{cccccccccccccccccccccccccccccccccccc$  | $4*E(3)^2$ $4*E(3)$          | 4 * E(3)   0          | 0 0             | 0 0                   | 0              | 0 0                  | $0 \qquad \qquad 2 \qquad 2$ | $*E(3)^2 2*E(3)$ | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $4 * E(3)$ $4 * E(3)^2$ 4    | $*E(3)^2 \mid 0$      | 0 0             | 0 0                   | 0              | 0 0                  | $0 \qquad \qquad 2 \qquad 2$ | *E(3) 2*E(3)     | $^{2}$ 0 0        | 0 0              | 0 (                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $1 \cdot \chi_{1} + 0 \cdot \chi_{2} + 0 \cdot \chi_{3} + 1 \cdot \chi_{4} + 0 \cdot \chi_{5} + 0 \cdot \chi_{6} + 0 \cdot \chi_{7} + 0 \cdot \chi_{8} + 0 \cdot \chi_{9} + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \end{vmatrix} 2 \qquad 2$   | 2 2                          | 2 2                   | 2 2             | 2 2                   | 2              | 0 0                  | 0 0                          | 0 0              | 2 2               | 2 2              | 2 2                 | 0  0                        | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \ 0 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 1 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \right  \ 2 - 1 $  | -1 2                         | -1 2                  | $2 \qquad -1$   | $2 \qquad -1$         | -1             | 0 0                  | 0 0                          | 0 0              | 2 2               | -1 2             | -1 -                | $\cdot 1 \qquad 0 \qquad 0$ | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \ 0 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 1 \cdot \chi_{18} + 0 \cdot \chi_{19} + 0 \cdot \chi_{20} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \right  \ 2  -1  2 * E(3)^2$   | $-E(3)^2$ 2 * $E(3)$         | -E(3) 2               | $2*E(3)^2 -1 2$ | *E(3) $-E(3)$         | -E(3)          | 0 0                  | 0 0                          | 0 0              | $2 	 2 * E(3)^2$  | -1  2*E(3)       | $-E(3)^2 - E$       | $C(3) \mid 0 = 0$           | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $-E(3)$ $2*E(3)^2$           | $-E(3)^2$ 2           | 2*E(3) -1 2:    | $E(3)^2 - E(3)$       | $-E(3)^2$      | 0 0                  | 0 0                          | 0 0              | 2 2 * E(3)        | ( - )            | -E(3) $-E$          | $(3)^2 \mid 0 = 0$          | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \ 0 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 1 \cdot \chi_9 + 0 \cdot \chi_{10} + 1 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{19} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \right  \ 2  \ 2 * E(3)^2$   | $2*E(3)^2$ $2*E(3)$          | 2 * E(3)   2          | $2*E(3)^2$ 2 2  | *E(3) $2*E(3)$        | (2*E(3))       | 0 0                  | 0 0                          | 0 0              | $2 	 2 * E(3)^2$  | 2 	 2 * E(3)     | $2*E(3)^2$ $2*I$    | $E(3) \mid 0 = 0$           | 0                  | 0 0              | 0 0               | 0 0             |
| $\left  \ 0 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 1 \cdot \chi_{10} + 0 \cdot \chi_{11} + 1 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \right  \ 2  \ 2 * E(3)$   | $2 * E(3)$ $2 * E(3)^2$ 2    | $*E(3)^2$   2         | 2 * E(3) 2 2:   | $(E(3)^2 	 2*E(3)^2)$ | $2*E(3)^2$     | 0 0                  | 0 0                          | 0 0              | 2 2 * E(3)        | $2 	 2 * E(3)^2$ | 2 * E(3) $2 * E(3)$ | $E(3)^2 \mid 0 = 0$         | 0                  | 0 0              | 0 0               | 0 0             |
| $1 \cdot \chi_1 + 0 \cdot \chi_2 + 1 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} + 0 \cdot $ | 2 2                          | 2 2                   | 2 2             | 2 2                   | 2              | 2 2                  | 2 0                          | 0 0              | 0 0               | 0 0              | 0 (                 | ) 2 2                       | 2                  | 0 0              | 0 0               | 0 0             |
| $\left  \ 0 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 1 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 1 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \right  \ 2  \ 2 * E(3)$   | $2 * E(3)$ $2 * E(3)^2$ 2    | $*E(3)^2$ 2           | 2*E(3) 2 2:     | $(E(3)^2 	 2*E(3)^2)$ | $2*E(3)^2$     | 2  2 * E(3)  2 *     | $E(3)^2 \mid 0$              | 0 0              | 0 0               | 0 0              | 0 (                 | 2  2 * E                    | $(3) 	 2 * E(3)^2$ | 0 0              | 0 0               | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $2*E(3)^2$ $2*E(3)$          | 2 * E(3)   2          | $2*E(3)^2$ 2 2  | *E(3) $2*E(3)$        | 2*E(3)         | $2  2 * E(3)^2  2 *$ | E(3) = 0                     | 0 0              | 0 0               | 0 0              | 0 (                 | 2  2 * E                    | $(3)^2 	 2 * E(3)$ | 0 0              | 0 0               | 0 0             |
| $1 \cdot \chi_1 + 1 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} + 0 \cdot $ | 2 2                          | 2 2                   | 2 2             | 2 2                   | 2              | 0 0                  | 0 2                          | 2 2              | 0 0               | 0 0              | 0 (                 | 0 0                         | 0                  | 2 2              | 2 0               | 0 0             |
| $\left  \ 0 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 1 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10} + 1 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{14} + 0 \cdot \chi_{15} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{19} + 0 \cdot \chi_{21} + 0 \cdot \chi_{22} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} \right  \ 2  \ 2 * E(3)^2$   | $2*E(3)^2$ $2*E(3)$          | 2 * E(3)   2          | $2*E(3)^2$ 2 2  | *E(3) 2*E(3)          | (2*E(3))       | 0 0                  | $0 \qquad \qquad 2 \qquad 2$ | $*E(3)^2 2*E(3)$ | 0 0               | 0 0              | 0 (                 | 0  0                        | 0                  | $2  2 * E(3)^2$  | 2 * E(3) = 0      | 0 0             |
| $\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $2*E(3)$ $2*E(3)^2$ 2        | $*E(3)^2 \mid 2$      | 2*E(3) 2 2:     | $(E(3)^2 	 2*E(3)^2)$ | $2*E(3)^2$     | 0 0                  | $0 \qquad 2 \qquad 2$        | *E(3) 2*E(3)     | $^{2} \mid 0 = 0$ | 0 0              | 0 (                 | 0  0                        | 0                  | 2 	 2 * E(3) 	 2 | $2*E(3)^2 \mid 0$ | 0 0             |
| $1 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10} + 0 \cdot \chi_{11} + 0 \cdot \chi_{12} + 0 \cdot \chi_{13} + 0 \cdot \chi_{16} + 0 \cdot \chi_{17} + 0 \cdot \chi_{18} + 0 \cdot \chi_{19} + 0 \cdot \chi_{20} + 0 \cdot \chi_{21} + 0 \cdot \chi_{23} + 0 \cdot \chi_{24} + 0 \cdot \chi_{25} + 0 \cdot \chi_{26} + 0 \cdot \chi_{27} + 1 \cdot \chi_{27} + 0 \cdot $ | 1 1                          | 1 1                   | 1 1             | 1 1                   | 1              | 1 1                  | 1 1                          | 1 1              | 1 1               | 1 1              | 1 1                 | 1 1 1                       | 1                  | 1 1              | 1 1               | 1 1             |
| $ \left  \begin{array}{cccccccccccccccccccccccccccccccccccc$  | $E(3)$ $E(3)^2$              | $E(3)^2$ 1            | E(3) 1          | $E(3)^2$ $E(3)$       | $E(3)^{2}$     | 1 $E(3)$ $E$         | $(3)^2$ 1                    | $E(3) 	 E(3)^2$  | 1 $E(3)$          | $1 	 E(3)^2$     | E(3) $E($           | $(3)^2   1  E(3)$           | $E(3)^2$           | 1 	 E(3)         | $E(3)^2$ 1 1      | $E(3) 	 E(3)^2$ |
| $ \left[ \begin{array}{cccccccccccccccccccccccccccccccccccc$  | $E(3)^2 	 E(3)$              | E(3) 1                | $E(3)^2$ 1      | $E(3) 	 E(3)^2$       | E(3)           | 1 $E(3)^2$ E         | E(3) 1                       | $E(3)^2$ $E(3)$  | 1 $E(3)^2$        | 1 $E(3)$         | $E(3)^2$ $E($       | (3) $1 	 E(3)$              | E(3)               | $1 	 E(3)^2$     | E(3) 1 $E$        | $(3)^2 E(3)$    |

 $P_1 = Group([()]) \cong 1$   $P_2 = Group([(7, 9)(8, 10)]) \cong C2$   $P_3 = Group([(5, 6)(8, 10)]) \cong C2$ 

 $P_4 = Group([(5,6)(7,10)(8,9)]) \cong C2$ 

 $P_5 = Group([(7,9)(8,10), (7,8,9,10)]) \cong C4$ 

 $P_6 = Group([(7,9)(8,10), (5,6)(8,10)]) \cong C2 \times C2$ 

 $P_7 = Group([(7,9)(8,10), (5,6)(7,10)(8,9)]) \cong C2 \times C2$  $P_8 = Group([(7,9)(8,10), (7,8,9,10), (5,6)(8,10)]) \cong D8$ 

 $N_1 = Group([(5,6)(8,10), (7,8,9,10), (1,2,3), (7,9)(8,10), (4,5,6)]) \cong C3 \times D24$  $N_2 = Group([(5,6)(8,10), (7,8,9,10), (1,2,3), (7,9)(8,10), (4,5,6)]) \cong C3 \times D24$ 

 $N_3 = Group([(5,6)(8,10), (7,9)(8,10), (1,2,3)]) \cong C6 \times C2$ 

 $N_4 = Group([(5,6)(7,10)(8,9),(7,9)(8,10),(1,2,3)]) \cong C6 \times C2$  $N_5 = Group([(5,6)(8,10), (7,8,9,10), (1,2,3), (7,9)(8,10), (4,5,6)]) \cong C3 \times D24$ 

 $N_6 = Group([(5,6)(8,10), (1,2,3), (7,8,9,10)]) \cong C3 \times D8$ 

 $N_7 = Group([(5,6)(8,10), (1,2,3), (7,8,9,10)]) \cong C3 \times D8$   $N_8 = Group([(5,6)(8,10), (1,2,3), (7,8,9,10)]) \cong C3 \times D8$