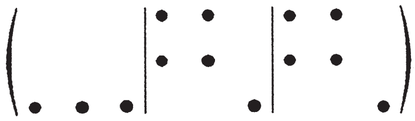
International Tables for Crystallography (2013). Vol. D, Section 1.1.4.8.5, pp. 18–19.

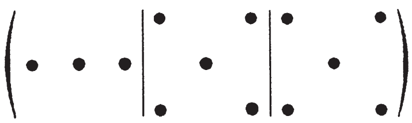
1.1.4.8.2. *Monoclinic system*

1.1.4.8.2.1. *Group* 2

Choosing the twofold axis parallel to Ox_3 and applying the direct inspection method, one finds

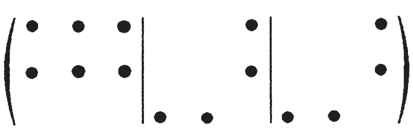


There are 13 independent components. If the twofold axis is parallel to Ox_2, one finds

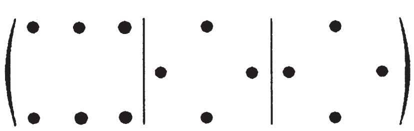


1.1.4.8.2.2. *Group m*

One obtains the matrix representing the operator m by multiplying by -1 the coefficients of the matrix representing a twofold axis. The result of the reduction will then be exactly complementary: the components of the tensor which include an odd number of 3's are now equal to zero. One writes the result as follows:



There are 14 independent components. If the mirror axis is normal to Ox_2, one finds



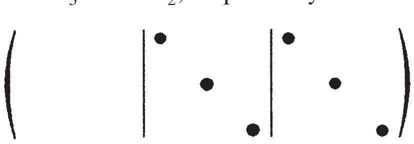
1.1.4.8.2.3. *Group* $2/m$

All the components are equal to zero.

1.1.4.8.3. *Orthorhombic system*

1.1.4.8.3.1. *Group* 222

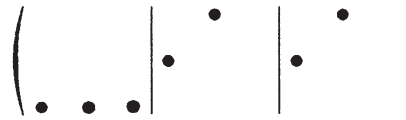
There are three orthonormal twofold axes. The reduction is obtained by combining the results associated with two twofold axes, parallel to Ox_3 and Ox_2, respectively.



There are 6 independent components.

1.1.4.8.3.2. *Group mm*2

The reduction is obtained by combining the results associated with a twofold axis parallel to Ox_3 and with a mirror normal to Ox_2:



There are 7 independent components.

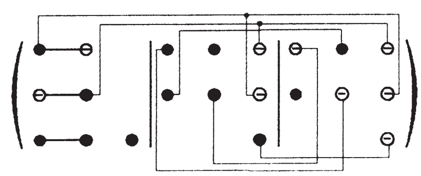
1.1.4.8.3.3. *Group mmm*

All the components are equal to zero.

1.1.4.8.4. *Trigonal system*

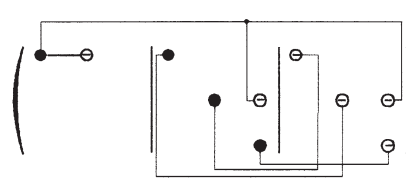
1.1.4.8.4.1. *Group* 3

The threefold axis is parallel to Ox_3. The matrix method should be used here. One finds



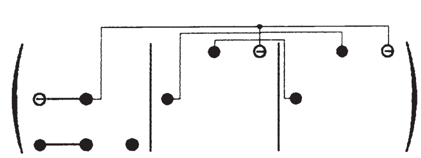
There are 9 independent components.

1.1.4.8.4.2. *Group* 32 *with a twofold axis parallel to* Ox_1



There are 4 independent components.

1.1.4.8.4.3. *Group* 3*m with a mirror normal to* Ox_1



There are 4 independent components.

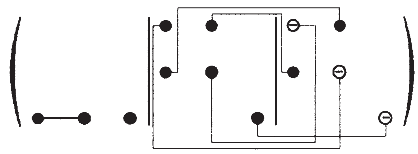
1.1.4.8.4.4. *Groups* $\bar{3}$ *and* $\bar{3}m$

All the components are equal to zero.

1.1.4.8.5. *Tetragonal system*

1.1.4.8.5.1. *Group* 4

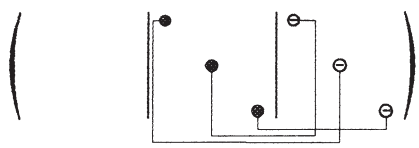
The method of direct inspection can be applied for a fourfold axis. One finds



There are 7 independent components.

1.1.4.8.5.2. *Group* 422

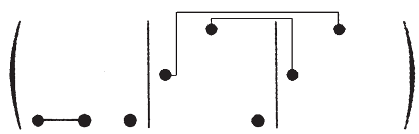
One combines the reductions for groups 4 and 222:



There are 3 independent components.

1.1.4.8.5.3. *Group* 4*mm*

One combines the reductions for groups 4 and 2*m*:



There are 4 independent components.

1.1.4.8.5.4. *Group* 4/*m*

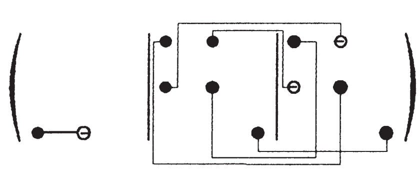
All the components are equal to zero.

1.1.4.8.5.5. *Group* $\bar{4}$

The matrix corresponding to axis $\bar{4}$ is

$$\begin{pmatrix} 0 & \bar{1} & 0 \\ 1 & 0 & 0 \\ 0 & 0 & \bar{1} \end{pmatrix}$$

and the form of the 3×9 matrix is

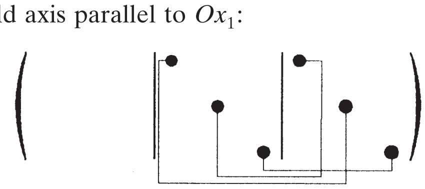


There are 6 independent components.

1.1.4.8.5.6. *Group* $\bar{4}2m$

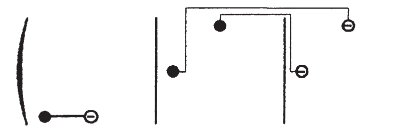
One combines either the reductions for groups $\bar{4}$ and 222, or the reductions for groups $\bar{4}$ and 2*mm*.

(i) Twofold axis parallel to Ox_1:



There are 6 independent components.

(ii) Mirror perpendicular to Ox_1 (the twofold axis is at 45°)



The number of independent components is of course the same, 6.

1.1.4.8.5.7. *Group* 4/*mm*

All the components are equal to zero.

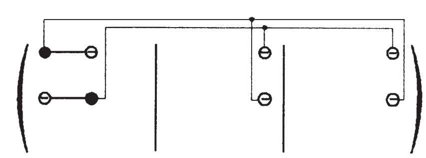
1.1.4.8.6. *Hexagonal and cylindrical systems*

1.1.4.8.6.1. *Groups* 6, A_∞, 622, $A_\infty \infty A_2$, 6*mm and* $A_\infty \infty M$

It was shown in Section 1.1.4.6.2.3 that, in the case of tensors of rank 3, the reduction is the same for axes of order 4, 6 or higher. The reduction will then be the same as for the tetragonal system.

1.1.4.8.6.2. *Group* $\bar{6} = 3/m$

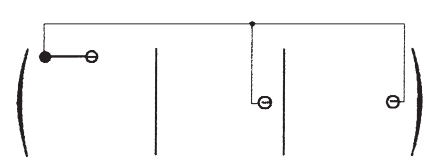
One combines the reductions for the groups corresponding to a threefold axis parallel to Ox_3 and to a mirror perpendicular to Ox_3:



There are 2 independent components.

1.1.4.8.6.3. *Group* $\bar{6}2m$

One combines the reductions for groups 6 and 2*mm*:



There is 1 independent component.

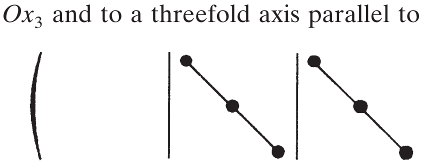
1.1.4.8.6.4. *Groups* 6/*m*, $(A_\infty/M)C$, 6/*mm and* $(A_\infty/M)\infty(A_2/M)C$

All the components are equal to zero.

1.1.4.8.7. *Cubic and spherical systems*

1.1.4.8.7.1. *Group* 23

One combines the reductions corresponding to a twofold axis parallel to Ox_3 and to a threefold axis parallel to [111]:



There are 2 independent components.