

MULTIPLE SOURCES, SPECIES AND PARTICLE SIZES IN ADMS-ROADS

CERC

This document refers to ADMS-Roads 4.1 only.

1. Sources and Groups

1.1 Sources

In ADMS-Roads, sources may be modelled explicitly as points, areas, volumes, lines or roads. Each source is defined by its position, dimensions (e.g. diameter, length, depth), height and emission characteristics, namely:

- velocity, volume flow rate, mass and buoyancy fluxes or mass emission rate
- temperature or density
- molecular mass
- specific heat capacity.

With a standard licence, the maximum number of road sources which can be modelled is 150, and the maximum number of industrial sources (point, line, area and volume) which can be modelled is 35 (3 point, 3 line, 4 area and 25 volume).

1.2 Groups

Up to 20 user-defined groups of sources may be created. Each group may contain any combination of the sources, so that a source may be a member of more than one group, but a source can only appear once in any one group. All of the defined sources can also be modelled together using the 'All sources' output option.

1.3 Emissions

A pollutant emission is defined by a mass emission rate. Each source may emit up to 12 pollutants.

1.4 Pollutant species

Particulate pollutant species may include up to 10 different particle size components, whereas gaseous pollutant species only include one component. The particles and gases are defined by their wet and dry deposition characteristics and conversion factor between $\mu\text{g}/\text{m}^3$ and parts per billion (gases only). (Note, however, that the wet and/or dry deposition characteristics are only taken into consideration if the appropriate deposition options are selected by the user.)

The default parameters are given in Table 1.

Table 1 Default dry and wet deposition parameters

| Pollutant type | Deposition velocity (m/s) | Terminal velocity (m/s) | Washout coefficient (s^{-1}) | Conversion factor |
|----------------|---------------------------|-------------------------|---|-------------------|
| Gaseous | 0 | N/A | 0 | 1 |
| *Particulate | 0 | 0 | 0 | N/A |

*1 particle size component

1.5 Output

The user has the choice of output due to a single source or due to any or all of the source groups.

2. Limitations

Short-term output is available with both single and multiple source output. Line plotting output is only available with single source, short-term gridded output. Long-term output is not available with single source output.

For details of other restrictions on using model options with different source types, using multiple model options together and producing different types of output, please refer to the *User Guide*.