

## Namelist "Species\_Wall\_Boundary\_Condition\_Setup"

This data setup allows the user to handle the boundary conditions applied to the species mass fractions. Walls are identified according to the orientation of their normal vector from the adjacent fluid-cell. They are named as :

- WEST : if the wall is located at the  $i-1$  face-cell (in regard to a fluid-cell)
- EAST : if the wall is located at the  $i+1$  face-cell.
- BACK : if the wall is located at the  $j-1$  face-cell.
- FRONT : if the wall is located at the  $j+1$  face-cell.
- SOUTH : if the wall is located at the  $k-1$  face-cell.
- NORTH : if the wall is located at the  $k+1$  face-cell.

## Full data set of the namelist

```
&Species_Wall_Boundary_Condition_Setup
West_Species_BC_Option  = 1      , East_Species_BC_Option  = 1      ,
Back_Species_BC_Option  = 1      , Front_Species_BC_Option = 1      ,
South_Species_BC_Option = 1      , North_Species_BC_Option = 1      ,
West_Species_BC_Value(:)= 0.0    , East_Species_BC_Value(:)= 0.0    ,
Back_Species_BC_Value(:)= 0.0    , Front_Species_BC_Value(:)= 0.0    ,
South_Species_BC_Value(:)= 0.0   , North_Species_BC_Value(:)= 0.0   ,
End_of_Data_Block= .true.      /
```



- If the usual “zero mass flux” conditions are applied for all walls, this namelist could be omitted in the data file. The code use this boundary condition by default.
- Don't forget to set the boolean data “End\_of\_Data\_Block” at the end of the namelist. A “.true.” value means the end of the data block when several namelists are used to define several type of boundary conditions.
- This namelist can be pooled with other ones of same type (for the temperature or velocity components) to form a wall boundary condition setup.
- When several namelists are present, the first namelist is devoted by default to the walls of the domain's ends (when they exist).

Find [here](#) some examples about wall boundary conditions.

## Definition of the data set



For a sake of clarity, the data are defined for the the “WEST” wall only. The user can



easily define the boundary conditions related to the other walls and velocity components by substituting the relevant character strings in the name of variables.

## WEST\_Species\_BC\_Option

- Type : integer value
- Select the type of the boundary condition applied to the species mass fraction and bounded to the WEST wall. The available options are :
  - 0 : Fixed value
  - 1 : Zero mass flux
- Default value = 1

## WEST\_Species\_BC\_Value

- Type : array of real values.
- The size of the array is defined by the species number.  
It contains the reference value of the species mass fraction.  
These data are only relevant whether WEST\_Species\_Option= 0.
- Default value = none

## End\_of\_Data\_Block

- Type : boolean value
- Specify the end of the namelist or a group of this type of namelist (if true).

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