

Namelist "Temperature_Initialization"

This data setup is used to define the initial temperature field over the domain for flows with heat transfer.

This namelist can be removed for isotherm flows.

Full data set of the namelist

```
&Temperature_Initialization Temperature_Reference_Value    = 293.0,  
                           Initial_Field_Option_For_Temperature= 0 ,  
                           White_Noise_Magnitude_For_Temperature= 0.0 /
```



For low Mach-number flows, the user must ensure the coherence between the reference values of physical quantities defined in the namelist "[Fluid_Properties](#)" (temperature, density and molecular mass), the initial temperature field over the domain (defined here) and, if needed, the species mass fraction distribution defined in the namelist "[Species_Initialization](#)" (if the gas is composed with multi-components). Keep in mind that the reference value of thermodynamic pressure is calculated from the reference values of temperature, density and molecular mass of the fluid (see namelist "[Fluid_Properties](#)").

The density field is then initialized from the fields of temperature (and species mass fractions if needed) by considering the thermodynamic pressure is uniform over the domain (low Mach-number hypothesis).

Definition of the data set

Temperature_Reference_Value

- Type : real value
- Reference temperature value.
- Default value must be set by the user

Initial_Field_Option_For_Temperature

- Type : integer value
- Option to define the distribution of the temperature over the domain :
 - 0 : Uniform distribution
 - 1 or greater : Optional values associated to temperature field defined by the users in the appropriate fortran module (see module_user_define_init_fields.f90). The reference value can be used to define the temperature scale.

- Default value = 0

White_Noise_Magnitude_For_Temperature

- Type : real value
- Magnitude of the white noise on the temperature field.
- The magnitude is defined as a fraction of the local value in each cell (i.e. 0.4 corresponds to 40% of the local value of temperature on the grid)
- Default value = 0

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<https://sunfluidh.lisn.upsaclay.fr/> - Documentation du code de simulation numérique SUNFLUIDH

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