

Gas Properties

The gas method refers to the equations of state used to calculate the gas properties such as the ratio of specific heats, or N-value, and the compressibility values, or Z-values.

The Ariel performance software allows the use of either the Hall equation of state (developed by the Chemical Engineering department at Texas A&M University), or the VMG thermal software (developed by Virtual Materials Group). The VMG software uses an APR, Advanced Peng Robinson, equation of state. The VMG software includes a larger number of available gas components and the ability to perform liquid drop-out flash calculations.

The Hall method can be used when running "natural gas" based applications. The advantage of Hall equation of state is its speed when running larger multi-run calculations with natural gas where the speed of the multi-run may be hampered by the VMG calculation method. The HALL method includes water condensate calculations. The Hall equation of state supports 30 gas components.

The VMG method can be used for all applications. The advantage of VMG is its accuracy and condensate flash calculations when running performance on heavy gasses or non-hydrocarbon based gasses. The VMG method performs hydrocarbon liquid drop-out flash calculations as well as water condensate calculations. The VMG equation of state supports thousands of gas components.

Ariel performance software will flag the user if the Hall option is used when the VMG option should be used due to the potential of non-water liquid dropout.

For assistance or questions regarding either gas property calculation method please contact The Ariel Application Engineering Department.