Emergency relief systems are commonly used to prevent vessel overpressure due to chemical reactions. In absence of detailed physical, thermodynamic, and kinetic data, often the calorimetric data are used to size the vents. The data obtained from the calorimeter depend on the experimental conditions and may vary depending on the type of calorimeter. Therefore a model is needed to replicate the calorimetric data for the run conditions and to scale to industrial sizes.

This paper presents an overview of relief sizing techniques for reactive chemicals. Kinetic parameters obtained from data of different calorimeters are compared and their effects on the relief area investigated. The paper discusses the validity of the models or correlations used for relief design and also compares bottom venting to top venting.