

Chemical Reactivity

Preventing Chemical Reactivity Hazards

Safe design and operation of chemical processes requires a thorough understanding of chemical reactivity and thermokinetics. Development of this understanding in an efficient, cost-effective manner involves multiple steps:

- Developing test plans
- Conducting tests
- Interpreting results
- Completing detailed analyses

ioMosaic consultants can help you implement any or all of these steps, depending on your specific needs.

Typical Applications

- ◆ Thermal characterization
- ◆ Reaction onset temperature
- ◆ Adiabatic temperature rise
- ◆ Heat-of-reaction
- ◆ Process simulation
- ◆ Scale-up
- ◆ ERS design
- ◆ Safe operating limits
- ◆ Process safety limits
- ◆ Isothermal evaluation
- ◆ Safe storage conditions
- ◆ Kinetic modeling
- ◆ Boiling/melting points
- ◆ Process optimization
- ◆ Regulatory compliance

Test Plan Development

Test plans can be designed to address any need, such as thermal hazard analysis of a new process, emergency relief system (ERS) design, incompatibility studies, kinetic model development or simply to identify decomposition reactions to avoid.

Testing

We work in concert with the consultants at ioKinetic, LLC, a state-of-the-art testing facility. This laboratory is equipped with a variety of instruments that perform, but are not limited to, adiabatic reaction calorimetry, differential scanning calorimetry and thermogravimetric analysis.

Data Interpretation

Understanding the data is a critical step in the overall testing process. Our consultants combine decades of experience in evaluating and interpreting raw data for effective application to your specific needs.

Analysis

Coupling the test data with our process simulation software, SuperChems™ Expert, our consultants can complete detailed thermal hazard analyses such as pressure relief design, chemical reactivity assessment and management, consequence analysis and quantitative risk analysis.

At ioMosaic, our consultants use the combination of thermal hazard data interpretation and process simulation to help solve your complex problems.

Technique	Measurement
Adiabatic Reaction Calorimetry	Temperature and pressure changes as a result of exothermic reactions
Differential Scanning Calorimetry	Caloric changes as a function of temperature
Thermogravimetric Analysis	Mass loss as a function of time or temperature



About us...

ioMosaic Corporation is the leading provider of safety and risk management consulting services, training and software solutions. Our first-hand knowledge of industry standards and regulations, coupled with decades of experience, provides us the rare ability to understand an issue from both the client's and regulator's perspective. We have industry-adopted tools and methodologies that we can apply to your most basic or complex problems and challenges.

For more information, please visit our website at www.ioMosaic.com or contact us at sales@ioMosaic.com or F 603.386.6522.

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