

The Use of Aerosol Formation, Flammability, and Explosion Information for Heat Transfer Fluid Selection

Krishna, K., W.J. Rogers, and M.S. Mannan
Mary Kay O'Connor Process Safety Center

Chemical Engineering Department
Texas A&M University
College Station TX 778433122
Email: mannan@tamu.edu

ABSTRACT

The devastating consequences of aerosol/mist explosions have been widely documented, and there are currently efforts to understand the mechanisms of formation and explosion of aerosols. Heat-transfer fluids (HTFs) are particularly susceptible to these hazards, because they are utilized under high pressures and below their flash points, making them more prone to leaking as aerosols. In fact, there is a critical need during design stages for a perception of explosion risks associated with the selection of HTFs. This paper discusses a novel scheme to integrate the knowledge of HTF aerosol formation from leaks in process equipment into the selection of HTFs during the design process. Hazards of aerosols formed from leaks are classified qualitatively using process pressure and droplet sizes.