Consider Aerosol Formation When Selecting Heat Transfer Fluids

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ABSTRACT

The hazards of gas explosions are well documented and safety systems have been developed to mitigate these hazards. Personnel are well trained in recognizing hazardous scenarios and adopting safety systems. The problem lies in the fact that the training imparted generally recognizes that gas explosion hazards require the fuel in the vapor form and thus deal with hazardous conditions above the liquid's flash point. Most literature do not address hazards below the flash point. Are hazardous scenarios possible below the liquid's flash point? The simple answer to this question is YES. An aerosol is a suspension of solid or liquid particles in a gas. Aerosols of heavy hydrocarbons consist of liquid droplets suspended in air. Heavy hydrocarbons are widely used in the process industry as in heat exchangers, pumps, gears, etc. Process equipment inevitably fails sometime during its lifetime, and leaks are a consequence of such failure. Depending on the conditions, the bulk heavy hydrocarbon may be emitted from the leak in the form of a stream, aerosol, vapor or any combination of these.