

Howard Talks Tech

Things you need to understand about Flammable Liquids

Ask the average person what is flash point and they will tell likely you it has something to do with when something will burn. They are partially correct; it has to do with the temperature at which a material will give off sufficient vapors that in the presence of a heat source of significant energy the vapors will ignite! So why is all this important to safety professionals? We need to be able to justify our recommended controls based on an understanding of the risk associated with an undesirable outcome.

In an effort to prevent fires and personal injury, requirements have been issued by the National Fire Protection Association (NFPA), the Uniform Fire Code (UFC), the Code of Federal Regulations (CFR - OSHA), the International Fire Code (IFC) and others. In this plethora of quantification what are the salient facts? Number one; a fire at the wrong time and place is a bad thing. Two; preventing fires is better than being good at putting them out. Among the complex assortment of requirements, one common factor exists. That is the requirement for classification, use of properly designed containers and proper management and control of quantities of these liquids is dependant on the classification.

Flammable liquids have many characteristics and most are related in some way to their hazard. What is: Density, Vapor pressure, Boiling point, Flash point, Auto ignition temperature? We as professionals need to be at least conversant with these terms. In any given situation any one and maybe several of these will impact our assessment of the risk of fire or explosion. Our business is one of details and definitions, they matter. A flammable liquid is very different than a combustible liquid. Inflammable? (Something which is inflammable is not necessarily something that is flammable)The criterion is based on flash point.

- A Flammable liquid is "any liquid that has a closed-cup flash point below 100 degrees Fahrenheit".
- A Combustible liquid is "any liquid that has a closed-cup flash point at or above 100⁰ F".

OSHA uses one definition of flash point temperature, that cited above, and the Dept. of Transportation uses another namely, **141⁰F**. The reasoning behind the difference is beyond the scope of this article. Do you also know the difference between the closed-cup and open cup methods of flash point determination? Reference: (UL 340). Or; why is there a need for 2 methods? Goggle it!

Flash point was selected as the basis for classification because it is directly related to a liquid's ability to generate vapor, i.e., its volatility. Since it is the vapor of the liquid, not the liquid itself that burns, vapor generation becomes the primary factor in determining the fire hazard. Liquids having flash points below ambient temperatures, (68-77⁰F), generally display a rapid rate of flame spread over the surface of the liquid, since it is not necessary for the heat of the fire to heat the liquid to generate more vapor.

NFPA 30, the Flammable & Combustible Liquids Code, indicates that flammable materials are classified as Class I liquids. Class I liquids are further subdivided into IA, IB and IC. Combustible liquids are referred to as Class II or Class III liquids also with sub-classes. I encourage all safety professionals to learn the definitions, the fire codes are based on the classifications! For example, if the quantity of IA flammable liquids in storage exceeds 10 gallons, FL storage cabinets should be used. Or, when a flammable liquid is poured from a drum, the drum and the secondary container should be electrically bonded to each other and to ground to avoid the possible buildup of a static charge. Locations where flammable vapor-air mixtures may exist must have the proper type of electrical wiring installed.